



**Part III**  
**Responsiveness Summary**

# Part III – Responsiveness Summary

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This Responsiveness Summary portion of the Record of Decision (ROD) presents the U.S. Environmental Protection Agency's (EPA) responses to the written and significant oral comments received at the public meeting and during the public comment period. The section is divided into responses to written comments and responses to oral comments. Comments are expressed in italics, EPA's responses in plain text.

## 1 Responses to Written Comments

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This section provides responses to written comments received by EPA during the public comment period. Written comments were received from Mr. Roy Arno, a community member.

### 1.1 Responses to Comments from Mr. Roy Arno, Community Member

**Written Comment No. 1.** *I felt the presentation was clear and understandable. I used to live in Kunia Village from 1977 - 1988 with no apparent ill effects to myself and my family.*

**EPA's Response.** Thank you for your comment.



## 2 Responses to Oral Comments

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In this section, EPA provides responses to the formal oral comments received at the public meeting held on April 2, 2003. Formal oral comments were received from five parties: Mr. Henry Curtis, representing Life of the Land; Ms. Audrey Hyrne, a community member; Mr. Marcus Oshiro, a member of the Hawaii State House of Representatives (39<sup>th</sup> Representative District); Ms. Kat Brady, representing Life of the Land, and Ms. Kathy Masunaga, a community member. The full transcript of the public meeting is available at EPA's Superfund Records Center at EPA's Regional Office in San Francisco, and locally at the information repository at the Wahiawa Library.

### 2.1 Responses to Comments from Mr. Henry Curtis, Life of the Land

**Mr. Curtis Comment No. 1, Transcript Page 15, Line 24.** *We would like to know where the dirt was moved to that came out of the site area, since we have been to two EPA presentations before and got different answers at each one.*

**EPA's Response.** As reported in the Final RI report dated November 6, 1998, Del Monte excavated 2,000 tons of soil in 1981 and 16,000 tons of soil in 1983 from the Kunia Village spill area. The soil was spread in a thin layer over an approximately 20 acre pineapple field in Del Monte Field 8 which is located about 1,700 feet west of Kunia Village (see Figure 12). This action was conducted with approval from the State of Hawaii Department of Health (HDOH) to allow volatilization and natural attenuation of the soil fumigants from the soil. The HDOH rationale for this action was that the soil fumigants were still permitted for agricultural use in pineapple fields at the time. This information was also discussed in EPA's January 1999 Fact Sheet and at the January 27, 1999 Public Meeting.

**Mr. Curtis Comment No. 2, Transcript Page 17, Line 7.** *Weren't the pesticides involved banned on the national level before the spill?*

**EPA's Response.** The spill occurred in April 1977. On September 30, 1983, more than 5 years later, EPA banned the use of EDB as a soil fumigant on agricultural crops. DBCP was banned in 1985.

**Mr. Curtis Comment No. 3, Transcript Page 21, Line 2.** *You have an estimated location of the Waianae-Koolau unconformity. So you're assuming that you know where the line is, and because the line is there, you know the groundwater will not travel beyond that. What assumptions have you used in assuming where you think it might be?*

**EPA's Response.** The contact (or unconformity) between the Koolau and Waianae basalts has traditionally been mapped at the land surface at a location about 4,000 feet west of the Kunia Well. However, EPA is more concerned with the location of the contact at the groundwater table surface because that is where the contact serves to block the flow of groundwater from the Waianae basalts to the Koolau basalts. EPA has assumed, consistent with numerous published geologic studies and maps, that the contact between the Koolau and Waianae basalts at the groundwater table lies about 1,000 feet or more east of the Kunia Village area. The geologic rationale behind this assumption is as follows: The Waianae volcano and basalts are older in age than the Koolau basalts. The surface of the Waianae volcano, which slopes downhill about 3 to 10 degrees to the east, was already present when the younger Koolau volcano was erupting and growing to the east. As the Koolau volcano grew, its lava flowed over and buried the existing slope of the Waianae volcano in the vicinity of present day Kunia village. Therefore, the unconformity between the Waianae and Koolau basalts is now a buried slope, which dips about 3 to 10 degrees to the east, beneath Kunia Village. Where this buried slope intersects the groundwater table, which lies approximately at sea level (about 800 feet beneath the land surface) is the hydrogeologic barrier between the Koolau and Waianae basalts. If a slope of 10 degree is assumed for

the unconformity, the sea level elevation contact between the Koolau and Waianae is about 1,000 feet east of the Kunia Village area. If a slope of 3 degrees is assumed, the sea level contact would be several thousand feet further east of Kunia Village.

## 2.2 Responses to Comments from Ms. Audrey Hyrne, Community Member

**Ms. Hyrne Comment No. 1- Transcript Page 16, Line 11.** *I just want to know who's paying for this. Who's footing the bill for this entire project?*

**EPA's Response.** At the beginning of the presentation on the Proposed Plan, EPA stated that Del Monte is paying for all costs associated with the investigation and cleanup of the site. Under the terms of the Administrative Order of Consent signed by Del Monte, EPA, and the Hawaii DOH in 1995, Del Monte is liable for all costs to conduct the RI/FS. This also includes reimbursing EPA and DOH for their response and oversight costs during the RI/FS. After this ROD has been signed, EPA will negotiate a Consent Decree that will include a work plan for design and construction of the remedy outlined in the ROD and will specify who will pay. EPA is assuming that Consent Decree negotiations will be conducted solely with Del Monte. However, Del Monte may decide to bring in other potentially responsible parties to share the costs.

**Ms. Hyrne Comment No. 2- Transcript Page 16, Line 13.** *It was an excellent presentation, Janet, but it's just honestly over the majority of, you know, everyone in Honolulu's head. If I would have brought anyone else here with me that didn't understand what MCL or DBCP or, you know, ethylene dibromide, all these other things that they never heard of before, they're never going to understand this. How are they going to comment on this? I think that maybe we need to have it understood a little more simply, you know. And I know, I've been to your office before, and I know what you have to work with, what you have to deal with. So it's nothing against the plan itself. I'm so happy you guys are here, you know, in 2003.*

**EPA's Response.** EPA understands that the material is technically complex and has made every effort to present the material in an understandable fashion at public meetings and in "plain language" fact sheets. EPA provides an open-ended time at every community meeting for questions and answers to insure that those in attendance understand the material presented. EPA also publishes the phone number of its Project Manager and its Community Involvement Coordinator, as well as the number of its toll-free message line, in every fact sheet and encourages community members to contact EPA directly to ask questions. EPA appreciates your efforts to attend public meetings, provide comments, and work with us on this important project.

**Ms. Hyrne Comment No. 3- Transcript Page 16, Line 25.** *But nonetheless, who's paying for all of this? Whose liability is this? Who's the one that said, okay, this 19 million or seven million here or three million there? That's my question.*

**EPA's Response.** As indicated above, Del Monte agreed to pay all costs associated with development of the remedial alternatives presented in the Proposed Plan. EPA has reviewed and commented on the estimated costs to implement the various remedial alternatives presented in the FS, including the selected remedy, and concurs that the estimated costs are accurately estimated based on the current understanding of site conditions.

**Ms. Hyrne Comment No. 4- Transcript Page 20, Line 19.** *I'm going to add on to what Mr. Oshiro had said earlier. You know, I know you talked about monitoring. Is that going to include medical monitoring in the future? I know you talked about monitoring. What does that encompass?*

**EPA's Response.** The monitoring referred to is monitoring of the groundwater plume, treated air and groundwater, remedial systems performance, and other physical aspects of the final remedy. Based on the findings of the Agency for Toxic Substances and Disease Registry (ATSDR) in their February 7, 1995 Public Health Assessment for the site, EPA believes medical monitoring is not necessary. ATSDR concluded the following: "Based on the available information, ATSDR concludes that the people of Kunia were not exposed to significant levels of EDB and DBCP in their drinking water. Therefore, we do not anticipate that the people who drank the Kunia well water will have any adverse health effects."

## 2.3 Responses to Comments from Mr. Marcus Oshiro, Hawaii State House of Representatives, District 39

**Mr. Oshiro Comment No. 1- Transcript Page 18, Line 2.** *Good to see you again. I think the last time we were here was back in '99. I'm glad this thing has moved along. A couple of comments. One, I'll probably be submitting written comments, also. I'll probably slow e-mail -- not e-mail, but snail mail.*

**EPA's Response.** EPA looks forward to receiving written comments from Mr. Oshiro.

**Mr. Oshiro Comment No. 2- Transcript Page 18, Line 7.** *On, I think it's on page eight of the plan, for the Remedy Option on the Basal Aquifer, there's three options there, and I think the preference at this time is to go with number two, extraction and treatment, contingent monitored natural attenuation. And then I believe it states that, if it is found that natural attenuation is not occurring, then Alternative 3 will become the preferred remedy. So I guess my comment would be, at what time would that occur? What would be the turning events? And when would that decision be made in the process?*

**EPA's Response.** As is described in the Selected Remedy section in Part II of this ROD, the basal aquifer remedy will be implemented using a phased approach. During phase one, the source control component will be implemented and the nature and extent of the basal aquifer plume will be characterized. In addition, point-of-compliance monitoring will be initiated. Based on modeling conducted as part of the RI/FS, a distance of 4,500 feet represents the furthest distance downgradient from the source area that groundwater exceeding MCLs could migrate using "worst-case" assumptions. Therefore, 4,500 feet downgradient of the Kunia Village source area is the currently estimated location where point of compliance monitoring will be conducted. If site characterization indicates that the plume has extended further than 4,500 feet downgradient, EPA will evaluate whether to install another point of compliance monitoring point further downgradient and/or implement the basal aquifer downgradient plume extraction and treatment action.

After construction of the phase one monitoring system is complete, routine quarterly monitoring will be conducted to evaluate the downgradient plume and monitor performance of the source control. If no exceedances are detected at the point of compliance well, monitoring during phase one will be conducted for three years to provide sufficient information to select phase two of the remedial action.

If there is sufficient evidence to suggest that natural attenuation, in conjunction with containment of the source area, can be effective at reducing COC concentrations to below MCLs in a reasonable timeframe, phase two will include implementation of contingent monitored natural attenuation. If the data collected during phase one indicate that natural attenuation will not be effective, phase two will include groundwater extraction and treatment for the basal aquifer downgradient plume.

**Mr. Oshiro Comment No. 3- Transcript Page 18, Line 18.** *The second comment I have would be, in the '99 meeting, we talked about some of the lands north of Wahiawa, the Galbraith lands, about 2200 acres, and the status of those acres where there were found some contamination of some burial sites,*

*spill sites in the Poamoho area. I don't see any of those sites discussed in this particular plan. But I would want to know, was final disposition, as far as remediation, done for those particular parcels out in the Poamoho area north of Wahiawa?*

**EPA's Response.** The Poamoho section is not discussed in the Proposed Plan because the investigations of the Other Potential Source Areas in the Poamoho Section showed low levels of contamination below EPA's health based guidelines. Based on these findings, EPA believes that no cleanup actions are needed. A description of the sampling conducted in the Poamoho Section can be found in the 1998 Remedial Investigation Report and the March 17, 2003 Remedial Investigation Technical Memorandum 02-02, Investigation Results for Additional Other Potential Source Areas.

**Mr. Oshiro Comment No. 4- Transcript Page 19, Line 3.** *And the third comment I would like to make is, is the consideration of delisting of those particular lands, given their physical distance from the Kunia Well and the areas of the monitoring wells, is the possibility of delisting still being considered by the EPA for those lands north of Wahiawa?*

**EPA's Response.** EPA was prepared to delist the Poamoho section in 2002, when a former Del Monte employee informed Del Monte that two other potential source areas for pesticide contamination could exist in the Poamoho section. Del Monte investigated those sites, under EPA oversight, in 2002 and 2003. The investigation results indicate that pesticides are not present at concentrations above EPA's health based guidelines. A Notice of Intent to Partially Delete will be published in the Federal Register. If there are no adverse comments during the 30-day public comment period, EPA will publish a Notice of Partial Site Deletion in the Federal Register.

## **2.4 Responses to Comments from Ms. Kat Brady, Life of the Land**

**Ms. Brady Comment No. 1- Transcript Page 19, Line 12.** *I would like to request a community meeting where a discussion could happen, where people could ask questions and have them answered at the meeting. I think it's kind of disingenuous, when people's lives have been impacted by this spill, that you give a dog and pony show, and you ask people to ask questions, but no answers are ever shared. That is not helpful to the community. What is helpful to the community is to understand what this well covers, what the groundwater, how it flows. So we want to see maps of how the groundwater flows, what other areas could be affected, and we want to learn from each other's questions. To have a meeting where people just ask questions, and they get written down, and nobody has the benefit of an answer is not helpful to us. This is about people's lives. And I think the questions that have been asked now about who's paying for it, we're taxpayers, we'd like to know. Are we footing the bill? Who's paying for this? And these are the kinds of things that we need to know. So to have a meeting where it's just talking heads is not helpful to us. And I am hereby formally requesting a meeting where we have a discussion, people can benefit from other people's questions and answers, and that we can actually find out what the impact of this is, what future things we should be worried about, where the chemicals are on the scale of contamination and related to health problems. We want real answers. Thank you.*

**EPA's Response.** Different opportunities for public comment were explained and provided at the Proposed Plan Public Hearing. Before the presentation on the Proposed Plan began, EPA stated that there would be an opportunity to ask clarifying questions immediately following the presentation. After any clarifying questions had been answered, EPA would take official comments on the Proposed Plan and respond to them in the Responsiveness Summary. A number of community members asked questions after the presentation and EPA responded before moving on to the formal receipt of public comments. EPA staff stayed after the close of the public hearing to talk with community members.



The detailed presentation on the Proposed Plan addressed the issues outlined in this comment such as who is paying for the investigation and cleanup, the direction of groundwater flow, the extent of contamination and risk from the site.

In addition to the Proposed Plan Public Hearing, EPA has conducted a number of community meetings for the Del Monte Site which included an open-ended question and answer session. Before conducting a community meeting in January 1999, EPA met with the residents of Village Park in the home of one of the residents. EPA publishes the phone number of its Project Manager and its Community Involvement Coordinator, as well as the number of its toll-free message line, in every fact sheet and encourages community members to contact EPA to ask questions.

EPA believes that the Del Monte Proposed Plan Public Hearing met the intent of EPA guidance and practice and therefore, does not need to be repeated.

**Ms. Brady Comment No. 2- Transcript Page 21, Line 10.** *I'm glad you're talking about Risk Assessment. But, you know, that's really more and more becoming problematic for the community. We really prefer the precautionary principle. A Risk Assessment is good, you know, well, it should only hurt, you know, one in a million people. Well, that's fine unless it's your kid who's actually being impacted. So the community more and more is requesting that the government really start looking, erring on the side of precaution. And we are really interested if the EPA ever goes by the precautionary principle and uses that as a measure rather than Risk Assessment, and how you deal with that kind of stuff. I sit on many military restoration advisory boards, and this has been something that we have been talking about for the last year. That's been a big issue in the communities. You know, Risk Assessments don't cut it if our kid is the one person that's going to be harmed. Thank you.*

**EPA's Response.** EPA fully supports pollution prevention and appreciates the use of precautionary principles; that is why EPA moved to ban the use of EDB as a soil fumigant 20 years ago when it became known that this compound was adversely impacting groundwater supplies in Hawaii, California, and other locations. However, the work at the Del Monte Site to date, including this Proposed Plan, must address contamination resulting from a spill and pesticide handling practices that pre-date the ban on use of EDB. Risk assessments are an appropriate and widely-accepted tool to conservatively evaluate the risks posed to public health and the environment and to help decision-makers make informed and reasonable decisions regarding appropriate uses of resources to efficiently and effectively clean up sites.

## 2.5 Responses to Comments from Ms. Kathy Masunaga, Community Member

**Ms. Masunaga Comment No. 1- Transcript Page 22, Line 10.** *Aloha. My name is Kathy Masunaga, and I'm a resident of this community here, and my husband is a retiree of Del Monte Corporation. And just formally, for the record, one of the things that I noticed, Janet, on your presentation was the fact that one of the areas, the trees were really, really tall, so it looks like, to me, even though this is comment on a plan, it looks like things have been done already. And I really want to, you know, commend the company and the government for working together. And I'm sure that, although there are other voices within the community that feel contrary to this, I think I'd like to give you guys and Del Monte a pat on the back. Thank you.*

**EPA's Response.** Comment acknowledged; thank you.

## References

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# References

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## Tables

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TABLE 1

## COMPOUNDS DETECTED IN VADOSE ZONE SOIL SAMPLES COLLECTED IN THE KUNIA VILLAGE AREA

PARAMETER	PRGs Soils <sup>a</sup>	Borehole: Depth: Date:	B-1 6 ft. 03/18/97	B-1 8 ft. 03/18/97	B-17 4 ft. 03/13/97	B-17 4 ft. 03/13/97 Dup	B-22 <sup>c</sup> 16ft. 08/19/97	B-23 6ft. 04/08/97	B-23 6 ft. 04/08/97 Dup	B-24 10ft. 08/19/97	B-26 4ft. 04/08/97
	Residential	UNITS	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q
<b>§260 - VOLATILE ORGANICS</b>											
ETHYLENE DIBROMIDE	6.9	UG/KG	6.8 U	N/A	3.3 U	3.2 U	3.2 J	3.3 U	3.4 U	3.3 U	3.3 U
1,2-DICHLOROPROPANE	350	UG/KG	6.8 U	N/A	3.3 U	3.2 U	3.8 U	3.3 U	3.4 U	3.3 U	3.3 U
ETHYLBENZENE	230,000	UG/KG	29	N/A	3.3 U	3.2 U	3.8 U	3.3 U	3.4 U	3.3 U	3.3 U
TOLUENE	520,000	UG/KG	3.1 U	3.1 U	3.3 U	3.3 U	3.8 U	3.3 U	3.4 U	3.3 U	3.3 U
<b>§081 - ORGANOCHLORINE PESTICIDES</b>											
GAMMA-BHC (LINDANE)	440	UG/KG	2.3 U	N/A	2.2 U	2.2 U	N/A	1.7 U	7.1 J	6.5	4.8
HEPTACHLOR	99	UG/KG	2.3 U	N/A	2.2 U	3.2	N/A	1.7 U	2.4	2.3 U	1.7 U
<b>§015M - FUEL HYDROCARBONS</b>											
Total Petroleum Hydrocarbons	5,000 <sup>b</sup>	MG/KG	19000	940	13 U	13 U	N/A	13 U	14 U	16	13 U
<b>§310 - POLYAROMATIC HYDROCARBONS</b>											
ACENAPHTHENE	18,000 <sup>b</sup>	UG/KG	170 J	18 UR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NAPHTHALENE	41,000 <sup>b</sup>	UG/KG	250 J	8.5 UR	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FLUORENE	2,600,000	UG/KG	1300 J	1.3 UR	N/A	N/A	N/A	N/A	N/A	N/A	N/A

<sup>a</sup>EPA Region IX Preliminary Remediation Goals (2000)<sup>b</sup>The values listed for Total Petroleum Hydrocarbons, Acenaphthene and Naphthalene are from the State of Hawaii Department of Health Tier 1 Action Levels (June 1996)<sup>c</sup>These soil samples were collected in the saturated zone (i.e., below the top of the perched water table)

U - Analyte was not detected above the reported sample quantitation limit

J - The associated value is an estimated quantity

UR - Result is unusable due to not meeting quality control criteria

N/A - not analyzed

Shading indicates compound was detected in excess of Action Level

Source- Feasibility Study, Del Monte Corporation (Oahu Plantation) Superfund Site, dated February 2003, prepared by Golder Associates

TABLE 1

## COMPOUNDS DETECTED IN VADOSE ZONE SOIL SAMPLES COLLECTED IN THE KUNIA VILLAGE AREA

PARAMETER	PRGs Soils <sup>a</sup>	Borehole: Depth: Date:	B-27 <sup>c</sup> 16ft. 08/19/97	B-27 16 ft. 08/19/97 Dup	B-28 2ft. 08/19/97	B-28 <sup>c</sup> 26ft. 08/19/97	B-34 1.5 ft. 08/20/97	B-34 1.5 ft. 08/20/97 Dup	B-37 1 ft 7/29/98	B-37 3 ft 7/29/98	B-38 1 ft 7/29/98
	Residential	UNITS	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q
<b>8260 - VOLATILE ORGANICS</b>											
ETHYLENE DIBROMIDE	6.9	UG/KG	3.7 U	3.5 U	3 U	3.7 U	3.2 U	3.2 U	2.5 U	2.5 U	0.38 J
1,2-DICHLOROPROPANE	350	UG/KG	3.7 U	3.5 U	3.0 U	30	3.2 U	3.2 U	2.5 U	2.5 U	2.5 U
ETHYLBENZENE	230,000	UG/KG	3.7 U	3.5 U	3 U	3.7 U	3.2 U	3.2 U	2.5 U	2.5 U	2.5 U
TOLUENE	520,000	UG/KG	3.7 U	3.5 U	3 U	3.7 U	3.2 U	3.2 U	0.46 J	0.3 J	0.58 J
<b>8081 - ORGANOCHLORINE PESTICIDES</b>											
GAMMA-BHC (LINDANE)	440	UG/KG	3.3	3.4	11	N/A	2.2 U	2.2 U	N/A	N/A	N/A
HEPTACHLOR	99	UG/KG	2.5 U	2.4 U	2.2	N/A	2.2 U	2.2 U	N/A	N/A	N/A
<b>8015M - FUEL HYDROCARBONS</b>											
Total Petroleum Hydrocarbons	5,000 <sup>b</sup>	MG/KG	23	26	110	N/A	13 U	15	N/A	N/A	N/A
<b>8310 - POLYAROMATIC HYDROCARBONS</b>											
ACENAPHTHENE	18,000 <sup>b</sup>	UG/KG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NAPHTHALENE	41,000 <sup>b</sup>	UG/KG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FLUORENE	2,600,000	UG/KG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

<sup>a</sup>EPA Region IX Preliminary Remediation Goals (2000)<sup>b</sup>The values listed for Total Petroleum Hydrocarbons, Acenaphthene and Naphthlene are from the State of Hawaii Department of Health Tier 1 Action Levels (June 1996)<sup>c</sup>These soil samples were collected in the saturated zone (i.e., below the top of the perched water table)

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Shading indicates compound was detected in excess of Action Level

Source- Feasibility Study, Del Monte Corporation (Oahu Plantation) Superf

TABLE 1

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PARAMETER	PRGs Soils <sup>a</sup>	Borehole: Depth: Date:	B-39 1 ft 7/29/98	B-40 1 ft 7/29/98	B-41 1 ft 7/29/98	B-41 3 ft 7/29/98	B-42 1 ft 7/29/98	B-43 1 ft 7/29/98	B-43 3 ft 7/29/98	B-44 1 ft 7/29/98	B-45 1 ft 7/29/98	B-45 1 ft Dupl. 7/29/98
	Residential	UNITS	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q	Conc. Q
<b>8260 - VOLATILE ORGANICS</b>												
ETHYLENE DIBROMIDE	6.9	UG/KG	0.37 J	0.37 J	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
1,2-DICHLOROPROPANE	350	UG/KG	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
ETHYLBENZENE	230,000	UG/KG	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U
TOLUENE	520,000	UG/KG	0.53 J	0.35 J	0.67 J	0.37 J	0.61 J	0.32 J	1.1 J	0.31 J	0.53 J	0.61
<b>8081 - ORGANOCHLORINE PESTICIDES</b>												
GAMMA-BHC (LINDANE)	440	UG/KG	7.95	N/A	N/A	N/A	N/A	N/A	6.48	N/A	N/A	N/A
HEPTACHLOR	99	UG/KG	2.31 J	N/A	N/A	N/A	N/A	N/A	1.0 U	N/A	N/A	N/A
<b>8015M - FUEL HYDROCARBONS</b>												
Total Petroleum Hydrocarbons	5,000 <sup>b</sup>	MG/KG	2910 J	N/A	N/A	N/A	N/A	N/A	15	N/A	N/A	N/A
<b>8310 - POLYAROMATIC HYDROCARBONS</b>												
ACENAPHTHENE	18,000 <sup>b</sup>	UG/KG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NAPHTHALENE	41,000 <sup>b</sup>	UG/KG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
FLUORENE	2,600,000	UG/KG	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

<sup>a</sup>EPA Region IX Preliminary Remediation Goals (2000)<sup>b</sup>The values listed for Total Petroleum Hydrocarbons, Acenaphthene and Naphthalene are from the State of Hawaii Department of Health Tier 1 Action Levels (June 1996)<sup>c</sup>These soil samples were collected in the saturated zone (i.e., below the top of the perched water table)

U - Analyte was not detected above the reported sample quantitation limit

J - The associated value is an estimated quantity

UR - Result is unusable due to not meeting quality control criteria

N/A - not analyzed

Shading indicates compound was detected in excess of Action Level

Source- Feasibility Study, Del Monte Corporation (Oahu Plantation) Superf



TABLE 2a

## TREATABILITY STUDY BOREHOLE SOIL SAMPLING RESULTS

Borehole Number	Depth (ft bgs)	EDB (µg/Kg)	DBCP (µg/Kg)	1,2-DCP (µg/Kg)
TB-1	30 ft	<2.5	<2.5	7.8
	40 ft	0.875	1.32	4.35
	50 ft	47.5	15.2	33.2
	60 ft	149	30.6	50.8
TB-2	30 ft	<2.5	<2.5	<2.5
	40 ft	0.52	<2.5	1.35
	50 ft	147	52.8	102
	60 ft	791	246	269
	65 ft	3080	1050	801
TB-3	25 ft	<2.5	<2.5	<2.5
	30 ft	<2.5	23	20.2
	40 ft	2.67	60	90.9
	50 ft	80.4	52.3	136
	60 ft	3450	975	1050
	70 ft	305	483	1440
TB-4	25 ft	<2.5	71.4	15.5
	30 ft	<500	12600	3090
	40 ft	<2.5	21.2	86.1
	50 ft	5.52	30.3	89.1
	60 ft	3300	1300	1500
	70 ft	2840	1820	1450
TB-5	30 ft	<2.5	40.1	8.44
	40 ft	<500	17400	4780
	45 ft	<500	9600	2470
TB-6	25 ft	<2.5	<2.5	32.3
	30 ft	<2.5	<2.5	36.4
	40 ft	<500	2040	901
	50 ft	<500	<500	646
	60 ft	<500	966	1730
	70 ft	<1000	2910	4430
TB-7	25 ft	<2.5	<2.5	<2.5
	30 ft	<2.5	<2.5	0.498 J
	45 ft	<2.5	<2.5	<2.5
	50 ft	<2.5	<2.5	<2.5
	60 ft	<2.5	<2.5	3.85
	70 ft	<2.5	<2.5	0.528 J
TB-8	30 ft	<2.5	<2.5	<2.5
	40 ft	<2.5	280	71.7
TB-9	30 ft	<2.5	<2.5	<2.5
	40 ft	<2.5	<2.5	<2.5
	50 ft	101	52.8	74.4
	60 ft	166	109	63.1
Post-RI Treatability Study Boreholes				
TB-7A	30	<2.5	126	192
	40	<500	6,160	3,050
	50	<2.5	65.1	86.7
	60	358	388	625
	70	576	920	680
TB-8A	30	<2.5	349	51.9
	35	<1000	11,000	<1000
	40	<500	3,180	1,590

Non-detects for EDB, DBCP and 1,2-DCP are shown as "<" the reporting limit

Source- Feasibility Study, Del Monte Corporation (Oahu Plantation) Superfund Site, dated February 2003, prepared by Golder Associates

TABLE 2b

## ANALYTICAL RESULTS FROM SOIL SAMPLES COLLECTED DURING PERCHED WELL DRILLING

Boring	Sample Depth (ft bgs)	EDB (µg/Kg)	DBCP (µg/Kg)	1,2-DCP (µg/Kg)
	Industrial PRG:	48	4,000	770
MW-9	55	ND (2.5)	ND (2.5)	ND (2.5)
	66	ND (2.5)	ND (2.5)	ND (2.5)
	78	ND (2.5)	ND (2.5)	20.1
MW-10	56	ND (2.5)	ND (2.5)	ND (2.5)
	65	ND (2.5)	ND (2.5)	ND (2.5)
	75	ND (2.5)	ND (2.5)	9.69
MW-12	58	ND (2.5)	ND (2.5)	ND (2.5)
	67	ND (2.5)	7.11	27.1
	78	ND (2.5)	4.94	38
MW-13	52	ND (2.5)	30.1	84
	64	3.49	40.6	77.8
	74	29.9	112	332
MW-14	58	ND (2.5)	ND (2.5)	ND (2.5)
	66	ND (2.5)	ND (2.5)	17.5
	76	ND (2.5)	ND (2.5)	67.5
MW-15	57	ND (2.5)	2.89	41.9
	74	4.79	66.2	288
MW-16	56	ND (2.5)	3.39	13.4
	66	1,890	984	1,730
MW-17	55	ND (2.5)	ND (2.5)	ND (2.5)
	66	ND (2.5)	ND (2.5)	12.3
	74	ND (2.5)	ND (2.5)	41.6
MW-18	57	ND (2.5)	ND (2.5)	ND (2.5)
	66	ND (2.5)	35.2	86.2
	74	ND (2.5)	392	522
MW-19	65	20.8	126	250
	75	29.7	97.5	209
MW-20	55	5.08	22.3	4.86
	66	ND (2.5)	1,660	4,340
MW-21	58	ND (2.5)	ND (2.5)	535
	76	14	1,220	1,280
EW-31	72	ND (2.5)	ND (2.5)	ND (2.5)
EW-32	75	2,460	5,070	11,400
EW-33	75	ND (2.5)	ND (2.5)	21.3
EW-34	56	ND (2.5)	ND (2.5)	16.3
	74	64	7.33	53.6
EW-35	77	214	131	152

Non-detects for EDB, DBCP and 1,2-DCP are shown as "<" the reporting limit

Source- Addendum to the Del Monte Corporation (Oahu Plantation) Remedial Investigation Report, dated April 2002, prepared by Golder Associates

TABLE 3

Monitoring Well and Extraction Well  
Perched Water Sampling Results

Well	Well Installation Date	Sample Date	EDB (µg/L)	DBCP (µg/L)	1,2-DCP (µg/L)
MW-1	May-97	6/4/1997	0.41	0.025	2.4
		9/8/1997	0.39	0.04 U	2.4
		10/20/1997	0.63	0.04 U	1.8
		1/12/1998	0.52	0.02 U	3
		5/12/1998	1.1	0.01 U	2.1
		7/27/1998	0.65	0.01 U	2.24
MW-2	May-97	6/4/1997	530	72	710 *D
		9/8/1997	570	84	850
		10/21/1997	140 J	56 J	530
		1/12/1998	108	33.8	500 D
		5/13/1998	82	40	880
		7/27/1998	68	32.8	797
MW-3	May-97	6/3/1997	1800	1900	6700 *D
		9/8/1997	3300	1200	3700
		10/22/1997	6800	1700	2000 D
		1/12/1998	2660	1060	2300 D
		5/13/1998	3200	1400	3500
		7/28/1998	1900	1090	2580
MW-3S	Aug-97	9/4/1997	130	60000	7100
		10/22/1997	400 U	78000 D	5300 D
		1/12/1998	130	45,900	5,200 D
		5/13/1998	100	47,000	4300
MW-5	Sep-97	9/4/1997	12	160	240
		10/23/1997	28	130	340
		1/13/1998	15.4	89.9	370 D
		5/13/1998	20	160	490
		7/28/1998	23	222	524
MW-6	Oct-97	10/24/1997	0.05	0.04 U	1.9
		11/20/1997	0.12	0.04 U	1.9
		1/13/1998	0.29	0.02 U	3
		5/13/1998	0.092 J	0.008 J	1.3
		7/27/1998	0.18	0.031	1.12
MW-7	Aug-00	11/8/2000	250 U	500 U	15500
		1/22/2001	500 U	1000 U	17400
		6/11/2001	Dry	Dry	Dry
MW-8	Aug-00	11/8/2000	2.5 U	5 U	76.6
		1/22/2001	10 U	20 U	383
		6/11/2001	Dry	Dry	Dry
MW-9 through MW-21 were installed in April - May 2001, and have not been sampled.					
HW-3	1980	2/10/1999	0.5 U	1 U	2.93
		6/4/1999	0.102 UJ	1 U	2.84 UJ
		7/27/1999	0.06 UJ	1 U	2.47
		1/31/2000	0.193/0.05	1U / 0.01U	2.93
		7/5/2000	0.5 U	1 U	3.08
		11/8/2000	0.5 U	1 U	3.67
		1/22/2001	0.5 U	1 U	3.06
		6/11/2001	0.5U / 0.02U	1U / 0.01U	2.2
HW-9	1980	12/15/1997	0.02 U	0.031	0.5 U
		1/12/1998	0.02 U	0.02 U	1 U
		5/13/1998	0.39	0.01 J	0.68
		7/28/1998	0.84	0.1	1.48
		2/9/1999	0.09 UJ	1 U	0.937 UJ
		6/4/1999	0.5 U	1 U	1.34
		7/27/1999	1.34	1 U	2.34
		1/31/2000	2.14 / 1.85	1 U / 0.013	4.79
		7/5/2000	7.41	1 U	4.82



TABLE 3

Monitoring Well and Extraction Well  
Perched Water Sampling Results

Well	Well Installation Date	Sample Date	EDB (µg/L)	DBCP (µg/L)	1,2-DCP (µg/L)
		11/8/2000	Dry	Dry	Dry
		1/22/2001	Dry	Dry	Dry
		6/11/2001	Dry	Dry	Dry
EW-1	May-98	6/1/1998	9	450	670
		6/1/1998	15	380	570
		9/10/1998	25 U	50 U	2150
		2/10/1999	14.9	66.1	766
		5/3/1999	14.7	51.3	563
		7/27/1999	10.8 J	41.1	560
		1/31/2000	0.5U/0.02U	1U/0.01U	584
		7/5/2000	10 U	20 U	593
		11/1/2000	Dry	Dry	Dry
		1/1/2001	Dry	Dry	Dry
		6/1/2001	Dry	Dry	Dry
EW-2	Nov-98	2/9/1999	8.91 J	1 U	14.7
		5/3/1999	18	5.1	21.8
		7/27/1999	74.8	17.4	70.4
		1/31/2000	22.2/14.3	5.9/3.4	26
		7/5/2000	44.4	12.2	61.6
		11/8/2000	241	46.3	231
		1/22/2001	257	61.3	246
EW-3	Nov-98	6/11/2001	190/180	41/49	170
		2/9/1999	51.6 J	98.1 J	195 J
		5/3/1999	906	256	1310
		7/27/1999	984	289	1440
		1/31/2000	25U/855	50U/301	1680
		7/5/2000	Dry	Dry	Dry
		11/8/2000	Dry	Dry	Dry
EW-4	Nov-98	1/22/2001	Dry	Dry	Dry
		6/11/2001	Dry	Dry	Dry
		2/9/1999	451 J	355 J	3790 J
		5/3/1999	Dry	Dry	Dry
		7/27/1999	Dry	Dry	Dry
		1/31/2000	Dry	Dry	Dry
		7/5/2000	Dry	Dry	Dry
EW-5	Nov-98	11/8/2000	Dry	Dry	Dry
		1/22/2001	Dry	Dry	Dry
		6/11/2001	Dry	Dry	Dry
		Well contained insufficient water for sampling during all sampling periods			
		2/9/1999	40 UJ	683	4580
		5/3/1999	46.7 UJ	518	6520
EW-6	Nov-98	7/27/1999	40.3 UJ	259	6690
		7/5/2000	250 U	500 U	7340
		11/8/2000	Dry	Dry	Dry
		1/22/2001	Dry	Dry	Dry
		6/11/2001	Dry	Dry	Dry
		Well contained insufficient water for sampling during all sampling periods			
EW-7	Nov-98	Well contained insufficient water for sampling during all sampling periods			
EW-8	Nov-98	Well contained insufficient water for sampling during all sampling periods			
EW-9	Nov-98	2/9/1999	19.4 J	5.6 J	17.1 J
		5/3/1999	11.9	4	19.9
		7/27/1999	27.5	12.9	55.8
		1/31/2000	25.6 / 23.6	9.4 / 9.15	34.1
		7/5/2000	20.3	8.93	35.9
		11/8/2000	49.1	29	119
		1/22/2001	48	28	119
		6/11/2001	36 / 20	17 / 11	110

TABLE 3

Monitoring Well and Extraction Well  
Perched Water Sampling Results

Well	Well Installation Date	Sample Date	EDB (µg/L)	DBCP (µg/L)	1,2-DCP (µg/L)
EW-10	Nov-98	2/9/1999	116 J	32.1 J	102 J
		5/3/1999	336	97	547
		7/27/1999	201	101	789
		1/31/2000	478 / 384	176 / 133	622
		7/5/2000	109	77.1	910
		11/8/2000	25 U	50 U	1220
		1/22/2001	25 U	50 U	1170
		6/11/2001	25U / 0.02U	50U / 0.01U	980
EW-11	Nov-98	2/9/1999	0.18 UJ	0.51 UJ	4.5 J
		5/3/1999	0.75	1 U	3.41
		7/27/1999	Dry	Dry	Dry
		1/31/2000	Dry	Dry	Dry
		7/5/2000	Dry	Dry	Dry
		11/8/2000	Dry	Dry	Dry
		1/22/2001	Dry	Dry	Dry
		6/11/2001	Dry	Dry	Dry
EW-12	Nov-98	2/9/1999	54.1 UJ	3160	11600
		5/3/1999	149 UJ	5750	26200
		7/27/1999	128 UJ	4520	25500
		7/5/2000	500 U	1000 U	23900
		11/8/2000	Dry	Dry	Dry
		1/22/2001	Dry	Dry	Dry
		6/11/2001	Dry	Dry	Dry
EW-13	Jul-00	11/8/2000	26.8	11.6	61.4
		1/22/2001	19.9	12.9	53.6
		6/11/2001	16 / 19	9.6 / 11	55
EW-14	Jul-00	11/8/2000	8.8	3.9	46.7
		1/22/2001	10.8	5.68	53.4
		6/11/2001	17 / 17	6.9 / 6.8	54
EW-15	Jul-00	11/8/2000	896	341	905
		1/22/2001	621	389	848
		6/11/2001	710 / 720	460 / 560	1100
EW-16	Jul-00	11/8/2000	24.1	5.11	25.3
		1/22/2001	13.6	6.21	26.2
		6/11/2001	29 / 34	8 / 7	29
EW-17	Jul-00	Well contained insufficient water for sampling during all sampling periods			
EW-18	Jul-00	Well contained insufficient water for sampling during all sampling periods			
EW-19	Jul-00	Well contained insufficient water for sampling during all sampling periods			
EW-20	Jul-00	Well contained insufficient water for sampling during all sampling periods			
EW-21	Jul-00	Well contained insufficient water for sampling during all sampling periods			
EW-22	Jul-00	11/8/2000	50 U	100 U	1740
		1/22/2001	25 U	50 U	1540
		6/11/2001	35 / 38	37 / 44	1700
EW-23	Jul-00	Well contained insufficient water for sampling during all sampling periods			
EW-24	Jul-00	Well contained insufficient water for sampling during all sampling periods			
EW-25	Jul-00	Well contained insufficient water for sampling during all sampling periods			
EW-26	Jul-00	11/8/2000	125 U	250 U	5640
		1/22/2001	Dry	Dry	Dry
		6/11/2001	Dry	Dry	Dry
EW-27	Jul-00	11/8/2000	250 U	500 U	14200
		1/22/2001	250 U	500 U	12600
		6/11/2001	Dry	Dry	Dry

TABLE 3

Monitoring Well and Extraction Well  
Perched Water Sampling Results

Well	Well Installation Date	Sample Date	EDB (µg/L)	DBCP (µg/L)	1,2-DCP (µg/L)
EW-28	Jul-00	11/8/2000	5 U	10 U	123
		1/22/2001	22.5	10.5	42.5
		6/11/2001	71 / 80	20 / 26	90
EW-29	Jul-00	11/8/2000	250 U	500 U	13100
		1/22/2001	Dry	Dry	Dry
		6/11/2001	Dry	Dry	Dry
EW-30	Aug-00	11/8/2000	500 U	2220	26200
		1/22/2001	Dry	Dry	Dry
		6/11/2001	Dry	Dry	Dry
EW-31	May-01	6/11/2001	17 / 15	19 / 17	60
EW-32	May-01	6/11/2001	8500 / 8500	7500 / 8800	18000
EW-33	May-01	6/11/2001	17 / 14	2 U / 0.61	66
EW-34	May-01	6/11/2001	160 / 170	15 / 15	190
EW-35	May-01	6/11/2001	90 / 110	33 / 39	110

U - Analyte was not detected above the given sample quantitation limit

J - Estimated value

Samples collected during January 2000 and June 2001 were analyzed for ethylene dibromide and 1,2 dibromo-3-chloropropane by both Method 8260 and Method 504.1.

Results from the 8260 analysis are presented first, followed by the results from the 504.1 analysis (8260 / 504.1).

RI Monitoring wells MW-1, MW-2, MW-3, MW-3S, MW-5, and MW-6 have not been sampled since completion of the RI.

Source- Feasibility Study, Del Monte Corporation (Oahu Plantation) Superfund Site, dated February 2003, prepared by Golder Associates



TABLE 4

## COMPOUNDS DETECTED IN KUNIA VILLAGE AREA BASAL GROUNDWATER WELLS

Well	Comments	Sample Date	504 - EDB/DBCP		8260 - VOLATILE ORGANICS			632 - CARBAMATES & UREA PESTICIDES
		Compound	EDB	DBCP	1,2-DCP	1,2,3-TCP	TCE	BROMACIL
		Screening Level=	0.04 HI MCL	0.04 HI MCL	5 MCL	0.6 HI MCL	5 MCL	90 <sup>a</sup>
		Sample Date	µG/L	µG/L	µG/L	µG/L	µG/L	µG/L
Kunia Well	SAMPLES COLLECTED DURING RI	10/20/1997 <sup>b</sup>	0.04 U	0.92	0.5 U	0.7	0.5 U	2
		10/20/97-Dup <sup>b</sup>	0.06	1.1	0.5 U	0.5 U	0.5 U	na
		11/24/1997	0.22 J	1.4 J	0.5	0.9	0.5 U	2
		12/15/1997	0.13	0.7	0.5 U	0.9	0.5 U	1.83
		01/12/1998	0.16	0.73	1 U	1	1 U	1.8
		05/11/1998	0.16	0.89	0.5 U	0.86	0.5 U	1.5
		07/27/1998	0.21 J	0.64	0.46	0.80	0.27 J*	1.2
	POST RI SAMPLES	02/11/1999	0.14	0.72	0.44 UJ	0.992 UJ	0.279 UJ	NA
		2/11/99-Dup	0.16	0.82	0.477 UJ	0.994 UJ	0.285 UJ	NA
		02/01/2000	0.0709	0.534	0.407	1.08	0.25	NA
		07/05/2000	0.0869 J	0.68 J	1 U	1.03	1 U	NA
		01/22/2001	0.0869 J	0.53 J	1 U	1.19	1 U	NA
		06/11/2001	0.095	0.66	1 U	1.10	1 U	NA
Basal Well 2703-02	SAMPLES COLLECTED DURING RI	10/23/1997	0.1	0.66	0.5 U	0.7	0.5 U	1.8
		11/20/1997	0.14	0.93	0.5 U	0.5 U	0.5 U	3.2
		12/16/1997	0.11	0.7	0.5 U	0.7	0.5 U	2.15
		01/13/1998	0.14	0.84	1 U	0.8 J	1 U	1.9
		05/12/1998	0.26	0.74	0.51	0.54	0.5 U	1.3
		5/12/98 Dup.	0.26	0.75	0.52	0.61	0.5 U	1.6
		07/27/1998	0.15 J	0.86	0.53 J	0.57 J	0.26 J*	1.3
		7/27/98 Dup.	0.16 J	0.90	0.53 J	0.62 J	0.25 J*	1.6
	POST RI SAMPLES	02/10/1999	0.12	0.59	0.551 UJ	0.689 UJ	0.278 UJ	NA
		06/08/1999	0.112	0.674	0.494 UJ	0.623 UJ	0.273 UJ	NA
		02/01/2000	0.0703	0.559	0.445 J	0.835 J	0.26	NA
		07/05/2000	0.0857	0.693	1 U	1 U	1 U	NA
		01/22/2001	0.102 J	0.571 J	1 U	1.14	1 U	NA
		06/11/2001	0.085	0.54	1 U	1 U	1 U	NA

a - EPA Lifetime Health Advisory for drinking water

b - Sample represents last sample collected at the end of Oct 18-20 pumping test.

HI MCL - State of Hawaii Administrative Rule Title 11, Chapter 11-20

MCL - Maximum Contaminant Level

U - Analyte was not detected above the given sample quantitation limit

J - Estimated Value

J\* - Trichloroethene was also detected in the Trip Blank associated with the 7/98 sampling

Shading indicates compound was detected in excess of Action Level

Blank spaces indicates analyte was not tested for in that sample

NA - Not Analyzed

Source- Feasibility Study, Del Monte Corporation (Oahu Plantation) Superfund Site, dated February 2003, prepared by Golder Associates

EDB= ETHYLENE DIBROMIDE

DBCP= DIBROMOCHLOROPROPANE

1,2-DCP= 1,2-DICHLOROPROPANE

1,2,3-TCP= 1,2,3-TRICHLOROPROPANE

TCE= TRICHLOROETHYLENE



TABLE 5  
REGIONAL BASAL GROUNDWATER WELLS ANALYTICAL RESULTS

Well	Sample Date	EDB (UG/L)	DBCP (UG/L)	1,2-DCP (UG/L)	1,2,3-TCP (UG/L)	TCE (UG/L)	Bromacil (UG/L)
Screening Level		0.04 HI MCL	0.04 HI MCL	5 MCL	0.6 HI MCL	5 MCL	90b
Country Club	11/05/1997	0.04 U	0.04 U	0.5 U	0.5 U	0.5 U	1 U
	02/17/1998	0.02 U	0.038	1 U	1 U	1 U	1 U
	05/11/1998	0.025	0.071	1 U	1 U	1 U	1 U
	7/98	0.019 J	0.059	0.143 J	0.216 J	1 U	1 U
Navy Well	10/22/1997	0.04 U	0.04 U	0.5 U	0.5 U	2.8	1 U
	01/12/1998	0.02 U	0.02 U	1 U	1 U	3	1 U
	05/12/1998	0.02 U	0.01 U	0.5 U	0.5 U	2.8	1 U
	07/28/1998	0.02 UJ	0.01 U	0.5 U	0.5 U	2.65	1 U
Honouliuli (2303-03)	05/11/1998	0.02 U	0.01 U	0.5 U	0.5 U	0.5 U	1 U
	7/98	0.02 U	0.01 U	1 U	1 U	1 U	1 U
Waikakalaua ST12MW05	01/12/1998	0.02 UJ	0.02 UJ	1 U	1 U	0.5 J	1 U
	01/12/1998	0.02 UJ	0.02 UJ	1 U	1 U	1 U	1 U

a - For comparison purposes, this table provides the Regional Basal Well analytical results for compounds that were detected in the Kunia Village Area Wells

b - EPA Lifetime Health Advisory for drinking water

HI MCL - State of Hawaii Administrative Rule Title 11, Chapter 11-20

MCL - Maximum Contaminant Level

U - Analyte was not detected above the given sample quantitation limit

J - Estimated Value

na - Not Analyzed

Shading indicates compound was detected in excess of Action Level

Source- Feasibility Study, Del Monte Corporation (Oahu Plantation) Superfund Site, dated February 2003, prepared by Golder Associates



TABLE 6

## REGIONAL WELL SAMPLING RESULTS CONDUCTED BY HAWAII DEPARTMENT OF HEALTH

Well Screening Level	Sample Date	EDB (UG/L) 0.04 HI MCL	DBCP (UG/L) 0.04 HI MCL	1,2-DCP (UG/L) 5 MCL	1,2,3-TCP (UG/L) 0.6 HI MCL	TCE (UG/L) 5 MCL	Bromacil (UG/L) 90 <sup>b</sup>
Country Club	07/21/1998	0.04 U	0.02 U	NA	NA	NA	NA
	08/25/1998	0.01 U	0.06	NA	<0.5 J	NA	NA
	12/01/1998	0.01 U	0.06	NA	<0.5 J	NA	NA
	03/16/1998	0.01 U	0.06	NA	<0.5 J	NA	NA
	04/21/1999	0.04 U	0.06	NA	<0.5 J	NA	NA
	02/08/2000	<0.04 J	0.07	0.3 U	0.2 U	0.2 U	NA
	05/11/2000	<0.04 J	0.08	0.3 U	0.31	0.2 U	NA
	06/09/2000	0.3 U	0.3 U	0.3 U	0.2 U	0.2 U	NA
	08/14/2000	<0.04 J	0.07	0.3 U	0.27	0.2 U	NA
	10/12/2000	<0.04 J	0.08	0.3 U	0.3	0.2 U	NA
	02/26/2001	<0.04 J	0.07	0.3 U	0.27	0.2 U	NA
	05/08/2001	<0.04 J	0.08	0.3 U	0.28	0.2 U	NA
	07/11/2001	<0.04 J	0.06	0.3 U	0.28	0.2 U	NA
Honouliuli II (2303-03)	05/11/1998	0.01 U	0.02 U	NA	NA	NA	NA
	07/21/1998	0.01 U	0.02 U	NA	NA	NA	NA
	11/27/1998	0.01 U	0.02 U	NA	0.02 U	NA	NA
Honouliuli II (2303-05)	11/13/1998	0.01 U	0.02 U	NA	NA	NA	NA
	12/02/1998	0.01 U	0.02 U	NA	0.02 U	NA	NA
	04/13/2000	0.01 U	0.02 U	NA	NA	NA	NA
	05/24/2000	0.01 U	0.02 U	NA	0.04 U	NA	NA
	08/29/2000	0.01 U	0.02 U	NA	0.04 U	NA	NA
Honouliuli II (2303-06)	11/13/1998	0.01 U	0.02 U	NA	NA	NA	NA
	12/03/1998	0.01 U	0.02 U	NA	0.02 U	NA	NA
	04/13/1998	0.01 U	0.02 U	NA	NA	NA	NA
	05/24/2000	0.01 U	0.02 U	NA	0.04 U	NA	NA
	08/29/2000	0.01 U	0.02 U	NA	0.04 U	NA	NA
Navy Well (2803-05)	05/11/2000	0.01 U	0.02 U	NA	0.15	NA	NA
	06/09/2001	NA	NA	0.3 U	NA	3.6	NA
	09/25/2000	0.01 U	0.02 U	0.3 U	0.1	4.3	NA
	10/12/2000	0.01 U	0.02 U	0.3 U	0.13	3.9	NA
	02/22/2001	0.01 U	0.02 U	<1.0 J	0.11	3.4	NA
	05/08/2001	0.01 U	0.02 U	0.3 U	0.1	3.4	NA

a - For comparison purposes, this table provides the Regional Basal Well analytical results for compounds that were detected in the Kunia Village Area Wells

b - EPA Lifetime Health Advisory for drinking water

HI MCL - State of Hawaii Administrative Rule Title 11, Chapter 11-20

MCL - Maximum Contaminant Level

U - Analyte was not detected above the given sample quantitation limit

J - Estimated Value

<0.5 J - Department of Health Laboratory Reported as NQ - Non Quantifiable

na - Not Analyzed

Source- Feasibility Study, Del Monte Corporation (Oahu Plantation) Superfund Site, dated February 2003, prepared by Golder Associates

<p align="center"><b>Table 7</b>  <b>Summary of Chemicals of Concern and Exposure Point Concentrations</b></p>						
<b>Exposure Point</b>	<b>Chemical of Concern</b>	<b>Frequency of Detection</b>	<b>Mean Concentration (ppb)</b>	<b>Maximum Concentration (ppb)</b>	<b>RME Exposure Point Concentration (ppb)</b>	<b>Statistical Measure</b>
<b>Kunia Surface Water/Perched Aquifer- Current Kunia Village Workers/ Residents</b>						
	DBCP	1/1	---	0.3	0.3	Maximum
	EDB	1/1	---	167	167	Maximum
<b>Kunia Groundwater- Current Kunia Village Residents</b>						
	DBCP	22/22	0.91	1.4	0.99	95% UCL-T
	EDB	20/22	0.15	0.46	0.23	95% UCL-T
	DCP	9/17	0.46	0.7	0.57	95% UCL-T
	TCP	16/17	0.77	1	0.92	95% UCL-T
	Bromacil	12/12	1.80	3.2	2.1	95% UCL-T
<b>HCC Well (1.5 Miles downgradient) - Current Maintenance/Irrigation Worker</b>						
	DBCP	3/4	0.05	0.071	0.071	Maximum
	EDB	2/4	0.02	0.02	0.02	Maximum
	DCP	1/4	0.14	0.143	0.143	Maximum
	TCP	1/4	0.37	0.216	0.92	Maximum
<b>Kunia Groundwater- Hypothetical Future Irrigation Use and Residential Use</b>						
	DBCP	22/22	0.91	1.4	0.99	95% UCL-T
	EDB	20/22	0.15	0.46	0.23	95% UCL-T
	DCP	9/17	0.46	0.7	0.57	95% UCL-T
	TCP	16/17	0.77	1	0.92	95% UCL-T
	Bromacil	12/12	1.80	3.2	2.1	95% UCL-T

Table 7 Summary of Chemicals of Concern and Exposure Point Concentrations						
Exposure Point	Chemical of Concern	Frequency of Detection	Mean Concentration (ppb)	Maximum Concentration (ppb)	RME Exposure Point Concentration (ppb)	Statistical Measure
Downgradient Resident (HCC Well 1.5 Miles downgradient) -Hypothetical Future Residential Use						
	DBCP	3/4	0.05	0.071	0.071	Maximum
	EDB	2/4	0.02	0.02	0.02	Maximum
	DCP	1/4	0.14	0.143	0.143	Maximum
	TCP	1/4	0.37	0.216	0.92	Maximum
Downgradient Resident (3 Miles downgradient) - Hypothetical Future Residential Use						
	DBCP	Not applicable (N/A) - Exposure point concentrations based on modeling of Kunia area basal aquifer data.			0.00606	95% UCL-N
	EDB	N/A			0.004	95% UCL-N
	DCP	N/A			0.012	95% UCL-N
	TCP	N/A			0.00606	95% UCL-N
Downgradient Resident (4.5 Miles downgradient) - Hypothetical Future Residential Use						
	DBCP	N/A - Exposure point concentrations based on modeling of Kunia area basal aquifer data.			0.00258	95% UCL-N
	EDB	N/A			0.0039	95% UCL-N
	DCP	N/A			0.00773	95% UCL-N
	TCP	N/A			0.0039	95% UCL-N
Notes: N/A = Not applicable ppb = parts per billion or µg/L (micrograms per liter) 95% UCL-N = 95 per cent upper confidence limit on the normalized groundwater data 95% UCL-T = 95 per cent upper confidence limit on the log transformed data						

TABLE 8  
CANCER TOXICITY DATA SUMMARY

Pathway: Inhalation								
Chemical of Concern	Unit Risk	Units	Adjustment	Inhalation Cancer Slope Factor	Units	Weight of Evidence/Cancer Guideline Description	Source	Date (1) (MM/DD/YY)
EDB	2.20E-04	(ug/cu m)-1	3,500	7.70E-01	(mg/kg/day)-1	B2	IRIS	7/14/1998
DBCP	6.90E-07	(ug/cu m)-1	3,500	2.40E-03	(mg/kg/day)-1	B2	HEAST	7/0/97
DCP	1.94E-05	(ug/cu m)-1	3,500	6.80E-02	(mg/kg/day)-1	B2	EPA, Region IX, 1998	5/7/1998
TCP	2.00E-03	(ug/cu m)-1	3500	7.00E+00	(mg/kg/day)-1	B2	EPA, Region IX, 1998	5/7/1998
Pathway: Oral/Dermal								
Chemical of Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (2)	Units		Weight of Evidence/Cancer Guideline Description	Source Target Organ	Date (1) (MM/DD/YY)
EDB	8.50E+01	100.00%	8.50E+01	(mg/kg/day)-1		B2	IRIS	07/14/98
DBCP	1.40E+00	100.00%	1.40E+00	(mg/kg/day)-1		B2	HEAST	7/0/97
DCP	6.80E-02	100.00%	6.80E-02	(mg/kg/day)-1		B2	HEAST	7/0/97
TCP	7.00E+00	100.00%	7.00E+00	(mg/kg/day)-1		B2	HEAST	7/0/97

IRIS = Integrated Risk Information System  
HEAST= Health Effects Assessment Summary Tables

Weight of Evidence:  
Known/Likely  
Cannot be Determined  
Not Likely

(1) For IRIS values, provide the date IRIS was searched.  
For HEAST values, provide the date of HEAST.  
EPA, Region IX, PRG Tables, May 7, 1998.

(2) Adjusted Dermal Cancer Slope Factor = Oral Cancer Slope factor divided by the Oral-to-Dermal Adjustment factor.

EPA Group:  
A - Human carcinogen  
B1 - Probable human carcinogen - indicates that limited human data are available  
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans  
C - Possible human carcinogen  
D - Not classifiable as a human carcinogen  
E - Evidence of noncarcinogenicity

TABLE 9  
NON-CANCER TOXICITY DATA SUMMARY

<b>Pathway: Inhalation</b>									
Chemical of Concern	Chronic/ Subchronic	Inhalation RfC	Units	Inhalation RfD	Units	Primary Target Organ	Combined Uncertainty Modifying Factors	Source of Data RfC:RfD:Target Organ	Dates (1) (MM/DD/YY)
EDB	Chronic	2.00E-04	mg/m3	5.71E-05	mg/kg-day	Sperm	1000	HEAST	7/0/97
DBCP	Chronic	2.40E-04	mg/m3	6.86E-05	mg/kg-day	Testes	1000	IRIS	7/14/1998
DCP	Chronic	4.0E-03	mg/m3	1.14E-03	mg/kg-day	Nasal mucosa	300	IRIS	7/14/1998
TCP	Chronic	NA	mg/m3	5.00E-03	mg/kg-day	NA	NA	EPA, Region IX, 1998	5/7/1998
<b>Pathway: Oral/Dermal</b>									
Chemical of Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty Modifying Factors	Sources of RfD: Target Organ	Dates (1) (MM/DD/YY)
EDB	Chronic	5.70E-05	mg/kg/day	5.70E-05	mg/kg/day	NA	NA	EPA, Region IX, 1998	5/7/1998
DBCP	Chronic	5.70E-05	mg/kg/day	5.70E-05	mg/kg/day	NA	NA	EPA, Region IX, 1998	5/7/1998
DCP	Chronic	1.10E-03	mg/kg/day	1.10E-03	mg/kg/day	NA	NA	EPA, Region IX, 1998	5/7/1998
TCP	Chronic	6.00E-03	mg/kg/day	6.00E-03	mg/kg/day	Red Blood Cell	1000	IRIS	7/14/1998

NA = Not Applicable

(1) For IRIS values, this is the date IRIS was searched.

For HEAST values, this is the date of HEAST.

EPA, Region IX, PRG Tables, May 7, 1998.

(2) Dermal RfD = Oral RfD Value x Oral-to-Dermal Adjustment factor (100% for these COCs)

TABLE 10  
RISK CHARACTERIZATION SUMMARY - CARCINOGENIC AND NONCARCINOGENIC

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Scenario Timeframe: Current (1); Receptor Population: Kunia Pit Area Worker; Receptor Age: Adult													
Groundwater	Water/Perched Aquifer	Volatilization into Ambient Air from Pit Water resulting from the Perched aquifer	EDB	--	4E-08	--	4E-08	EDB	Sperm	--	0.003	--	0.003
			DBCP	--	2E-11	--	2E-11	DBCP	Testes	--	0.000004	--	0.000004
			(Total)	--	4E-08	--	4E-08	(Total)		--	0.003	--	0.003
Total Risk Across All Media and All Exposure Routes							4E-08	Total Hazard Index Across All Media and All Exposure Routes					0.003
												Total Sperm HI =	0.003
												Total Testes HI =	0.000004

Scenario Timeframe: Current (1); Receptor Population: Kunia Village Resident; Receptor Age: Child/Adult													
Groundwater	Water/Perched Aquifer	Volatilization into Ambient Air from Pit Water resulting from the Perched aquifer	EDB	--	9E-08	--	9E-08	EDB	Sperm	--	0.005	--	0.005
			DBCP	--	5E-13	--	5E-13	DBCP	Testes	--	0.00001	--	0.00001
			(Total)	--	9E-08	--	9E-08	(Total)		--	0.005	--	0.005
Total Risk Across All Media and All Exposure Routes							9E-08	Total Hazard Index Across All Media and All Exposure Routes					0.005
												Total Sperm HI =	0.005
												Total Testes HI =	0.00001

Scenario Timeframe: Current; Receptor Population: HCC Irrigation Worker; Receptor Age: Adult													
Groundwater	Groundwater	Groundwater from Basal Aquifer During Irrigation Activities	DBCP	--	6E-11	--	6E-11	EDB	Testes	--	0.001	--	0.001
			EDB	--	5E-09	--	5E-09	DBCP	Sperm	--	0.0004	--	0.0004
			DCP	--	3E-09	--	3E-09	DCP	Nasal Mucosa	--	0.00001	--	0.00001
			TCP	--	5E-07	--	5E-07	TCP	Red Blood Cell	--	0.00004	--	0.00004
			(Total)	--	5E-07	--	5E-07	(Total)		--	0.001	--	0.001
Total Risk Across All Media and All Exposure Routes							5E-07	Total Hazard Index Across All Media and All Exposure Routes					0.001
												Total Testes HI =	0.001
												Total Sperm HI =	0.0004
												Total Nasal Mucosa HI =	0.00001
												Total Red Blood Cell HI =	0.00004

Scenario Timeframe: Future (2); Receptor Population: Kunia Section Drip Irrigation Worker; Receptor Age: Adult													
Groundwater	Groundwater	Groundwater from Basal Aquifer During Irrigation Activities	EDB	--	--	4E-06	4E-06	EDB	Sperm	--	--	0.002	0.002
			DBCP	--	--	2E-07	2E-07	DBCP	Testes	--	--	0.0074	0.01

**TABLE 10**  
**RISK CHARACTERIZATION SUMMARY - CARCINOGENIC AND NONCARCINOGENIC**

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
			DCP	--	--	2E-08	2E-08	DCP	Nasal Mucosa	--	--	0.00079	0.001
			TCP	--	--	2E-06	2E-06	TCP	Red Blood Cell	--	--	0.0001	0.0001
			Bromacil	--	--	--	--	Bromacil	Dec. Body Wt. Gain	--	--	0.0000038	0.0000038
			(Total)	--	--	6E-06	6E-06	(Total)	--	--	--	0.01	0.01
Total Risk Across All Media and All Exposure Routes							<b>6E-06</b>	Total Hazard Index Across All Media and All Exposure Routes					<b>0.01</b>

Total Sperm HI =

0.002

Total Testes HI =

0.01

Total Nasal Mucosa HI =

0.001

Total Red Blood Cell HI =

0.0001

Total Decrease Body Weight Gain HI =

0.000004

Scenario Timeframe: Future (2); Receptor Population: Kunia Section Spray Irrigation Worker; Receptor Age: Adult													
Groundwater	Groundwater	Groundwater from Basal Aquifer During Irrigation Activities	EDB	--	2E-06	--	2E-06	EDB	Sperm	--	0.1	--	0.1
			DBCP	--	2E-08	--	2E-08	DBCP	Testes	--	0.4	--	0.4
			DCP	--	4E-07	--	4E-07	DCP	Nasal Mucosa	--	0.01	--	0.01
			TCP	--	6E-05	--	6E-05	TCP	Red Blood Cell	--	0.005	--	0.01
			Bromacil	--	--	--	--	Bromacil	Dec. Body Wt. Gain	--	NA	--	--
			(Total)	--	6E-05	--	6E-05	(Total)	--	--	0.5	--	0.5
Total Risk Across All Media and All Exposure Routes							<b>6E-05</b>	Total Hazard Index Across All Media and All Exposure Routes					<b>0.5</b>

Total Sperm HI =

0.1

Total Testes HI =

0.4

Total Nasal Mucosa HI =

0.01

Total Red Blood Cell HI =

0.01

Scenario Timeframe: Future (2); Receptor Population: Hypothetical Kunia Village Resident; Receptor Age: Child/Adult													
Groundwater	Groundwater	Groundwater/Kunia Well	EDB	3E-04	--	2E-06	3E-04	EDB	Sperm	0.1	--	0.001	0.1
			DBCP	2E-05	--	1E-07	2E-05	DBCP	Testes	0.6	--	0.004	0.6
			DCP	6E-07	--	1E-08	6E-07	DCP	Nasal Mucosa	0.02	--	0.0004	0.02
			TCP	1E-04	--	1E-06	1E-04	TCP	Red Blood Cell	0.01	--	0.0001	0.01
			Bromacil					Bromacil	Dec. Body Wt. Gain	0.001		0.000002	0.001
			(Total)	4E-04	--	3E-06	4E-04	(Total)		0.8	--	0.005	0.78
	Air	Volatilization from Residential Water Use	EDB	--	1E-05	--	1E-05	EDB	Sperm	--	0.7	--	0.7
			DBCP	--	2E-07	--	2E-07	DBCP	Testes	--	2.5	--	2.5

TABLE 10  
RISK CHARACTERIZATION SUMMARY - CARCINOGENIC AND NONCARCINOGENIC

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total	
			DCP	--	3E-06	--	3E-06	DCP	Nasal Mucosa	--	0.1	--	0.1	
			TCP	--	5E-04	--	5E-04	TCP	Red Blood Cell	--	0.03	--	0.03	
			Bromacil					Bromacil	Dec. Body Wt. Gain		0.003		0.003	
			(Total)	--	5E-04	--	5E-04	(Total)		--	3.4	--	3.4	
Total Risk Across All Media and All Exposure Routes							9E-04	Total Hazard Index Across All Media and All Exposure Routes					4.2	
													Total Sperm HI =	0.8
													Total Testes HI =	3.1
													Total Nasal Mucosa HI =	0.1
													Total Red Blood Cell HI =	0.04
													Total Decreased Body Weight Gain HI =	0.004

Scenario Timeframe: Future (2); Receptor Population: Hypothetical 1.5-Mile Downgradient Resident; Receptor Age: Child/Adult															
Groundwater	Groundwater	Groundwater/Downgradient Well	EDB	3E-05	--	2E-07	3E-05	EDB	Sperm	0.01	--	0.00008	0.01		
			DBCP	1E-06	--	9E-08	2E-06	DBCP	Testes	0.4	--	0.003	0.4		
			DCP	1E-07	--	3E-09	1E-07	DCP	Nasal Mucosa	0.005	--	0.00010	0.005		
			TCP	2E-05	--	3E-07	2E-05	TCP	Red Blood Cell	0.001	--	0.00002	0.001		
			(Total)	5E-05	--	6E-07	5E-05	(Total)		0.5	--	0.003	0.5		
	Air	Volatilization from Residential Water Use	EDB	--	1E-06	--	1E-06	EDB	Sperm	--	0.06	--	0.06		
			DBCP	--	1E-07	--	1E-07	DBCP	Testes	--	1.8	--	1.8		
			DCP	--	7E-07	--	7E-07	DCP	Nasal Mucosa	--	0.02	--	0.02		
			TCP	--	1E-04	--	1E-04	TCP	Red Blood Cell	--	0.008	--	0.008		
			(Total)	--	1E-04	--	1E-04	(Total)		--	1.9	--	1.9		
Total Risk Across All Media and All Exposure Routes							2E-04		Total Hazard Index Across All Media and All Exposure Routes					2.4	
												Total Sperm HI =		0.07	
												Total Testes HI =		2.3	
												Total Nasal Mucosa HI =		0.03	
												Total Red Blood Cell HI =		0.009	

Scenario Timeframe: Future (2); Receptor Population: Hypothetical 3.0-Mile Downgradient Resident; Receptor Age: Child/Adult													
Groundwater	Groundwater	Groundwater/Downgradient Well	EDB	5E-06	--	3E-08	5E-06	EDB	Sperm	0.003	--	0.00002	0.003
			DBCP	1E-07	--	7E-10	1E-07	DBCP	Testes	0.004	--	0.00002	0.004
			DCP	1E-08	--	3E-10	1E-08	DCP	Nasal Mucosa	0.0004	--	0.000008	0.0004
			TCP	6E-07	--	8E-09	6E-07	TCP	Red Blood Cell	0.00004	--	0.0000005	0.00004
			(Total)	6E-06	--	4E-08	6E-06	(Total)		0.01	--	0.00005	0.01



**TABLE 10**  
**RISK CHARACTERIZATION SUMMARY - CARCINOGENIC AND NONCARCINOGENIC**

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient					
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total	
	Air	Volatilization from Residential Water Use	EDB	--	2E-07	--	2E-07	EDB	Sperm	--	0.01	--	0.01	
			DBCP	--	1E-09	--	1E-09	DBCP	Testes	--	0.02	--	0.02	
			DCP	--	6E-08	--	6E-08	DCP	Nasal Mucosa	--	0.002	--	0.002	
			TCP	--	3E-06	--	3E-06	TCP	Red Blood Cell	--	0.0002	--	0.0002	
			(Total)	--	3E-06	--	3E-06	(Total)	--	0.03	--	0.03		
Total Risk Across All Media and All Exposure Routes							9E-06		Total Hazard Index Across All Media and All Exposure Routes					0.04
													Total Sperm HI =	0.01
													Total Testes HI =	0.02
													Total Nasal Mucosa HI =	0.002
													Total Red Blood Cell HI =	0.0002

Scenario Timeframe: Future (2); Receptor Population: Hypothetical 4.5-Mile Downgradient Resident; Receptor Age: Child/Adult														
Groundwater	Groundwater	Groundwater/Downgradient Well	EDB	3E-06	--	2E-08	3E-06	EDB	Sperm	0.002	--	0.00001	0.002	
			DBCP	8E-08	--	5E-10	8E-08	DBCP	Testes	0.002	--	0.00001	0.002	
			DCP	8E-09	--	2E-10	8E-09	DCP	Nasal Mucosa	0.0003	--	0.00001	0.0003	
			TCP	4E-07	--	5E-09	4E-07	TCP	Red Blood Cell	0.00002	--	0.0000003	0.00002	
			(Total)	4E-06	--	3E-08	4E-06	(Total)		0.004	--	0.00003	0.004	
	Air	Volatilization from Residential Water Use	EDB	--	1E-07	--	1E-07	EDB	Sperm	--	0.01	--	0.01	
			DBCP	--	7E-10	--	7E-10	DBCP	Testes	--	0.01	--	0.01	
			DCP	--	4E-08	--	4E-08	DCP	Nasal Mucosa	--	0.001	--	0.001	
			TCP	--	2E-06	--	2E-06	TCP	Red Blood Cell	--	0.0001	--	0.0001	
			(Total)	--	2E-06	--	2E-06	(Total)		--	0.02	--	0.02	
Total Risk Across All Media and All Exposure Routes							6E-06		Total Hazard Index Across All Media and All Exposure Routes					0.02
												Total Sperm HI =	0.01	
												Total Testes HI =	0.01	
(1) This scenario is evaluated as "current", however, the excavation pit was backfilled in October 1999. Exposure is not expected												Total Nasal Mucosa HI =	0.001	
(2) Future exposure is hypothetical and not expected to actually occur. It is evaluated for risk assessment purposes only.												Total Red Blood Cell HI =	0.0001	

(1) This scenario is evaluated as "current", however, the excavation pit was backfilled in October 1999. Exposure is not expected.

(2) Future exposure is hypothetical and not expected to actually occur. It is evaluated for risk assessment purposes only.

Federal and state regulations require the treatment of drinking water containing chemicals at concentrations above their MCLs prior to human consumption.

TABLE 11a

## SUMMARY OF REMEDIATION ALTERNATIVE EVALUATION FOR THE PERCHED AQUIFER

Criteria <sup>a</sup>	Evaluation <sup>b, c</sup>		
	P1 No Action	P2 Extraction & Treatment with Soil Cap	P3 Extraction & Treatment with Soil Cap and SVE
<u>Threshold Criteria</u>			
Overall Protection	Not Protective	Protective	Protective
Complies with ARARs	No	Yes	Yes
<u>Balancing Criteria</u>			
Long-Term Effectiveness and Permanence	Low	Moderate	High
Relative ranking	3	2	1
Reduction in Toxicity, Mobility, and Volume	Low	Moderate	High
Relative ranking	3	2	1
Short-Term Effectiveness	Low	Moderate	High
Relative ranking	3	2	1
Implementability	High	Moderate	Low
Relative ranking	1	2	3
Cost (net present value, millions)	\$0.0	\$2.1	\$3.0
Relative ranking	1	2	3

<sup>a</sup> See text for criteria definitions.

<sup>b</sup> Low/moderate/high. See text for evaluation basis.

<sup>c</sup> 1 = best, 3 = worst.

Source- Feasibility Study, Del Monte Corporation (Oahu Plantation) Superfund Site, dated February 2003, prepared by Golder Associates

TABLE 11b

## SUMMARY OF REMEDIATION ALTERNATIVE EVALUATION FOR THE BASAL AQUIFER

Criteria <sup>a</sup>	Evaluation <sup>b, c</sup>		
	B1 No Action	B2 Phased Pump-&-Treat with Contingent Monitored Natural Attenuation	B3 Pump-&-Treat for Both the Basal Source and Downgradient Areas
<u>Threshold Criteria</u>			
Overall Protection	Not Protective	Protective	Protective
Complies with ARARs	No	Yes	Yes
<u>Balancing Criteria</u>			
Long-Term Effectiveness and Permanence	Low	High	High
Relative ranking	3	1/2	1/2
Reduction in Toxicity, Mobility, and Volume	Low	High	High
Relative ranking	3	2	1
Short-Term Effectiveness	Low	High	High
Relative ranking	3	2	1
Implementability	High	Moderate	Very Low
Relative ranking	1	2	3
Cost (net present value, millions) <sup>d</sup>	\$0.0	\$9.9	\$17.9
Relative ranking	1	2	3

<sup>a</sup> See text for criteria definitions.

<sup>b</sup> Low/moderate/high. See text for evaluation basis.

<sup>c</sup> 1 = best, 3 = worst.

<sup>d</sup> Cost does not include wellhead treatment contingency.

Source- Feasibility Study, Del Monte Corporation (Oahu Plantation) Superfund Site, dated February 2003, prepared by Golder Associates

**TABLE 12**  
**SUMMARY OF ESTIMATED ALTERNATIVE COSTS**

Alternative		Estimated Costs (millions) <sup>a</sup>		
		Capital	O&M <sup>b</sup>	Total
<b><u>Perched Aquifer</u></b>				
P1	No Action	\$0	\$0	\$0.0
P2	Groundwater Extraction and Treatment with Soil Cap	\$0.72	\$1.36	\$2.1
P3	Groundwater Extraction and Treatment with Soil Cap and SVE	\$1.46	\$1.59	\$3.0
<b><u>Basal Aquifer</u></b>				
B1	No Action	\$0	\$0	\$0.0
B2	Phased Pump-and-Treat with Contingent Monitored Natural Attenuation	\$4.27	\$5.58	\$9.9
B3	Pump-and-Treat for Both the Basal Source and Downgradient Areas	\$8.73	\$9.17	\$17.9
Wellhead Treatment (contingency <sup>c</sup> )		\$1.77	\$2.70	\$4.5

<sup>a</sup> Costs are for mid-2001. Alternative cost estimates do not include wellhead treatment contingency.

<sup>b</sup> Net present value of both operating and maintenance costs during remedial action and post-remediation maintenance and monitoring.

<sup>c</sup> O&M assumes 10-yr operation.

Source- Feasibility Study, Del Monte Corporation (Oahu Plantation) Superfund Site, dated February 2003, prepared by Golder Associates

<b>Table 13</b> <b>Cleanup Standards for COCs in Groundwater</b>	
<b>Chemical of Concern</b>	<b>EPA Cleanup Standard (µg/L)</b>
Ethylene Dibromide (EDB)	0.04 <sup>1</sup>
1,2-Dibromo-3-Chloropropane (DBCP)	0.04 <sup>1</sup>
1,2,3-Trichloropropane (TCP)	0.6 <sup>1</sup>
1,2-Dichloropropane (DCP)	5 <sup>2</sup>

<sup>1</sup> State of Hawaii MCL

<sup>2</sup> Federal EPA MCL

**TABLE 14**  
**DETAILED COST ESTIMATE RANGE FOR THE SELECTED REMEDY**

Component	Quantity	Unit	Unit Cost (\$)	Cost (\$)
Capital Costs (including Engineering and Management)			Capital Costs	
Perched Aquifer Remedy ( Extraction <sup>(1)</sup> , Treatment, Soil Cap and SVE)				
Establish institutional controls	1	ls.	\$130,000	\$130,000
Mobilize/site preparation	1	ls.	\$5,000	\$5,000
Soil cap and pit backfill	1	ls.	\$143,000	\$143,000
Fencing	1000	lf.	\$15	\$15,000
Monitoring well pumps	10	ea.	\$3,000	\$30,000
Phytoremediation treatment system for IDW	1	ls.	\$75,000	\$75,000
SVE treatment system	1	ls.	\$433,000	\$433,000
RCRA Compliance	1	ls.	\$20,000	\$20,000
Perched Aquifer Capital Cost Subtotal				\$851,000
Contractor Overhead and Profit			20%	\$170,000
Engineering and Construction Oversight	1	ls.	\$225,000	\$225,000
Contingency (applied to capital cost subtotal only)			25%	\$213,000
Total Perched Aquifer Capital Costs				\$1,459,000
Basal Aquifer Remedy (Source Control with Monitored Natural Attenuation)				
Establish institutional controls	1	ls.	\$50,000	\$50,000
New 6-inch diameter monitoring wells	4	ea.	\$250,000	\$1,000,000
New 8-inch diameter monitoring wells <sup>(2)</sup>	2	ea.	\$300,000	\$600,000
Source Area treatment system	1	ls.	\$482,000	\$482,000
Extraction well pump and piping	1	ls.	\$170,000	\$170,000
Discharge piping and booster pump	1	ls.	\$205,000	\$205,000
RCRA Compliance	1	ls.	\$30,000	\$30,000
Alternate water supply pipeline (for HCC, if needed)				\$210,000
Basal Aquifer with MNA Capital Cost Subtotal				\$2,747,000
Contractor Overhead and Profit			20%	\$549,000
Engineering and Construction Oversight	1	ls.	\$288,000	\$288,000
Contingency (applied to capital cost subtotal only)			25%	\$687,000
Total Basal Aquifer with MNA Capital Costs				\$4,271,000
Basal Aquifer Remedy (Source Control with Downgradient Plume Extraction and Treatment)				
Establish institutional controls	1	ls.	\$50,000	\$50,000
New 6-inch diameter monitoring wells	6	ea.	\$250,000	\$1,500,000
New extraction wells	5	ea.	\$300,000	\$1,500,000
New extraction well pumps	5	ea.	\$60,000	\$300,000
New reinjection wells	2	ea.	\$300,000	\$600,000
Source Area treatment system	1	ls.	\$482,000	\$482,000
Extraction well pump and piping	1	ls.	\$170,000	\$170,000
Discharge piping and booster pump	1	ls.	\$205,000	\$205,000
Downgradient treatment system	1	ls.	\$512,000	\$512,000
Booster pump for reinjection system	1	ls.	\$20,000	\$20,000
Header piping (8-inch diameter)	4000	lf.	\$20	\$80,000
Feeder piping (6-inch diameter)	1000	lf.	\$15	\$15,000
Electrical	1	ls.	\$50,000	\$50,000
RCRA Compliance	1	ls.	\$60,000	\$60,000
Alternate water supply pipeline (for HCC, if needed)				\$210,000
Basal Aquifer with Downgradient Extraction Capital Cost Subtotal				\$5,754,000
Contractor Overhead and Profit			20%	\$1,151,000
Engineering and Construction Oversight	1	ls.	\$388,000	\$388,000
Contingency (applied to capital cost subtotal only)			25%	\$1,439,000
Total Basal Aquifer with Downgradient Extraction Capital Costs				\$8,732,000
TOTAL ESTIMATED CAPITAL COST RANGE :			\$5,730,000 to 10,190,000	
Contingent Point-of-Use Treatment				
Total Estimated Cost- fully installed, operational system, including contingency	1	ls	\$1,766,000	\$1,766,000
TOTAL ESTIMATED CAPITAL COST RANGE (w/point-of-use treatment):			\$5,730,000 to \$11,960,000	

**TABLE 14**  
**DETAILED COST ESTIMATE RANGE FOR THE SELECTED REMEDY**

Component	Quantity	Unit	Unit Cost (\$)	Cost (\$)
<b>Annual Operations &amp; Maintenance Costs</b>	<b>Quantity</b>	<b>Units</b>	<b>Annual Cost (\$)</b>	<b>Present Worth Cost <sup>(1)</sup> (\$)</b>
<i>Perched Aquifer Remedy (Extraction, Treatment, Soil Cap and SVE)</i>				
Extraction/treatment system O&M & monitoring	8	yr.	\$36,000	\$233,000
SVE O&M	8	yr.	\$99,000	\$640,000
Perched aquifer monitoring	13	yr.	<sup>(4)</sup>	\$206,000
Soil cap and fence maintenance and monitoring	8	yr.	\$8,000	\$52,000
Evaluation and reporting	13	yr.	\$15,000	\$141,000
Perched Aquifer O&M Cost Subtotal				\$1,272,000
Contingency			25%	\$318,000
Total Perched Aquifer Capital Costs				\$1,590,000
<i>Basal Aquifer Remedy (Source Control with Monitored Natural Attenuation)</i>				
Extraction system maintenance	10	yr.	\$15,000	\$116,000
Source area treatment system O&M	10	yr.	\$123,000	\$950,000
Electricity (pumps)	10	yr.	\$392,000	\$3,027,000
Basal aquifer monitoring	15	yr.	<sup>(4)</sup>	\$268,000
Evaluation and reporting	15	yr.	\$10,000	\$104,000
Basal Aquifer with MNA O&M Cost Subtotal				\$4,465,000
Contingency			25%	\$1,116,000
Total Basal Aquifer with MNA O&M Costs				\$5,581,000
<i>Basal Aquifer Remedy (Source Control with Downgradient Plume Extraction and Treatment)</i>				
Source area extraction system maintenance	10	yr.	\$15,000	\$116,000
Source area treatment system O&M	10	yr.	\$123,000	\$950,000
Electricity (source area pumps)	10	yr.	\$392,000	\$3,027,000
Downgradient extraction system maintenance	5	yr.	\$16,000	\$69,000
Downgradient treatment system O&M	5	yr.	\$175,000	\$758,000
Electricity (downgradient pumps)	5	yr.	\$490,000	\$2,121,000
Basal aquifer monitoring	15	yr.	<sup>(4)</sup>	\$193,000
Evaluation and reporting	15	yr.	\$10,000	\$104,000
Basal Aquifer with Downgradient Extraction O&M Cost Subtotal				\$7,338,000
Contingency			25%	\$1,835,000
Total Basal Aquifer with Downgradient Extraction O&M Costs				\$9,173,000
<b>TOTAL DISCOUNTED O&amp;M COST RANGE :</b>				<b><u>\$7,170,000 to 10,760,000</u></b>
<i>Contingent Point-of-Use Treatment</i>				
Total Estimated O&M Cost- fully installed, operational system	10	yr.	\$350,000	\$2,700,000
<b>TOTAL DISCOUNTED O&amp;M COST RANGE (w/point-of-use treatment):</b>				<b>\$7,170,000 to \$13,460,000</b>
<b>TOTAL ESTIMATED CAPITAL COST RANGE (w/point-of-use treatment):</b>				<b>\$5,730,000 to \$11,960,000</b>
<b>ESTIMATED RANGE - PRESENT WORTH COST<sup>(5)</sup>:</b>				<b><u>\$12,900,000 to 25,400,000</u></b>

**Notes**

(1) The perched aquifer extraction systems was already installed.

(2)

These monitoring wells could potentially be converted to source area extraction wells to supplement pumping from the existing Kunia Well.

(3) Based on 5 to 15-year project and a 5% discount rate.

(4) Annual monitoring cost varies from over time, with higher costs initially and lower costs near the end.

(5) The lowest cost scenario includes monitored natural attenuation of the downgradient basal aquifer plume and no point-of-use treatment. The highest cost scenario includes full extraction and treatment of the downgradient basal aquifer plume, plus the contingent point-of-use treatment.

Capital cost estimates are not discounted because the construction work will be performed in the early stages of the project. O&amp;M costs are reported as present worth estimates given a 5% discount rate for a duration that varies between 5 and 15 years.

Cost estimates are based on numbers of wells, extraction rates and influent quality estimates that may be refined during remedial design. Cost estimates are expected to be within a +50 to -30% accuracy range.

ls. = lump sum; ea. = each; lf. = linear feet; yr. = year

**Table 15**  
**Chemical-Specific<sup>a</sup> ARARs for Selected Remedy**

Requirement	Citation <sup>b</sup>	ARAR Determination	Comments
<b>PERCHED AQUIFER – FEDERAL</b>			
<b>Safe Drinking Water Act (42 U.S.C., ch. 6A, § 300[f]–300[j]-26)</b>			
National primary drinking water standards are health-based standards (MCLs) for public water systems.	40 CFR. § 141.61(a)	Not an ARAR	The NCP defines MCLs as relevant and appropriate for groundwater determined to be a current or potential source of drinking water, in cases where MCLGs are not ARARs. The Kunia Village perched aquifer is considered a Class III aquifer (not a potential source of drinking water) because of insufficient quantity and drinking water standards are not relevant or appropriate.
<b>Resource Conservation and Recovery Act (42 U.S.C., ch. 82, §§ 6901–6991[I])</b>			
Defines RCRA hazardous waste. A solid waste is characterized as toxic if the waste exceeds the TCLP maximum concentrations. A solid waste can also be a hazardous waste if it contains a listed hazardous waste.	HAR Title 11 261-22(1)(3)(4), 261-24(a)(2)-(a)(8), 261-101, 261-3(a)(2)(C) or (F)  262-10, 262-11, 264-178, 264-197, 264-258, 264-288	Applicable	Applicable for determining whether either soil cuttings from well drilling or extracted groundwater is hazardous. The extracted groundwater will likely contain a listed waste and be considered hazardous under the “contained in” policy. Soil may also be hazardous waste under the “contained in” policy if it contains a listed waste or if it exceeds the criteria for characteristic hazardous waste.
<b>PERCHED AQUIFER – STATE (No chemical-specific State ARARs have been identified for the perched aquifer)</b>			
<b>BASAL AQUIFER – FEDERAL</b>			
<b>Safe Drinking Water Act (42 U.S.C., ch. 6A, § 300[f]–300[j]-26)<sup>c</sup></b>			
National primary drinking water standards are health-based standards (MCLs) for public water systems.	40 CFR § 141.61(a)	Relevant and appropriate	The NCP defines MCLs as relevant and appropriate for groundwater determined to be a current or potential source of drinking water, in cases where MCLGs are not ARARs. MCLs are relevant and appropriate for Class II aquifers such as the Ewa-Kunia Aquifer System at the Site.

(Table continues)



Table 15 (continued)

Requirement	Citation <sup>b</sup>	ARAR Determination	Comments
<b>Resource Conservation and Recovery Act (42 U.S.C., ch. 82, §§ 6901–6991[i])</b>			
Defines RCRA hazardous waste. A solid waste is characterized as toxic if the waste exceeds the TCLP maximum concentrations. A solid waste can also be a hazardous waste if it is “listed” or if it contains a listed hazardous waste.	See the specific citations above in the Perched Aquifer part of the table.	Applicable	Applicable for determining whether soil cuttings from well drilling or extracted groundwater is hazardous. If the extracted groundwater contains Site COCs (which are listed wastes) in excess of MCLs, it will be considered hazardous under the “contained in” policy. Soil may also be hazardous waste under the “contained in” policy if it contains a listed waste or if it exceeds the criteria for characteristic hazardous waste.
Groundwater protection standards: Owners/operators of RCRA treatment, storage, or disposal facilities must comply with conditions in this chapter that are designed to ensure that hazardous constituents entering the groundwater from a regulated unit do not exceed specified concentration limits in the uppermost aquifer underlying the waste management area of concern.	HAR Title 11 264-94, except 264-94(a)(2) and 264-94(b)	Relevant and appropriate	Applicable for hazardous waste TSD facilities; potentially relevant and appropriate in site-specific circumstances, such as when a listed waste has been released. The Del Monte Site is not a TSD facility. However, because the waste in the groundwater is a listed waste, this requirement is determined to be relevant and appropriate.
<b>BASAL AQUIFER - STATE (No chemical-specific State ARARs have been identified for the basal aquifer)</b>			
<b>AIR – STATE</b>			
Hawaii Air Pollution Control Standards: Address discharge of air pollution including visible emissions, fugitive dust, incineration, process industries, sulfur oxides from fuel combustion, storage of VOCs, VOC separation from water, and waste gas disposal.	HAR Title 11, Chapter 60	Applicable	The regulation requires permits for point sources and treatment systems that exceed 0.1 tons per year of each hazardous air pollutant. The substantive provisions of these regulations will be applicable for any action that includes air discharges exceeding this threshold. At this stage, it does not appear likely that either the air stripper (basal aquifer) or the SVE treatment unit (perched aquifer) will have discharges approaching the 0.1 tons per year threshold

Notes:

- <sup>a</sup> many action-specific ARARs contain chemical-specific limitations and are addressed in the action-specific ARARs tables (Table 16).
- <sup>b</sup> only the substantive provisions of the requirements cited in this table are ARARs
- <sup>c</sup> statutes and policies, and their citations, are provided as headings to identify general categories of ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the entire statutes or policies are ARARs; specific ARARs are addressed in the table below each general heading; only pertinent substantive requirements of the specific citations are considered ARARs

Acronyms/Abbreviations:

ARAR – applicable or relevant and appropriate requirement  
CFR. – *Code of Federal Regulations*  
ch. – chapter  
COCs – contaminants of concern  
HAR – Hawaii Administrative Rules  
MCL – maximum contaminant level  
MCLG – maximum contaminant level goal  
NCP – National Oil and Hazardous Substances Pollution Contingency Plan  
RCRA – Resource Conservation and Recovery Act  
§ – section  
SVE – soil vapor extraction  
TCLP – toxicity characteristic leaching procedure  
TSD – treatment, storage, and disposal  
VOCs – volatile organic compounds  
U.S.C. – *United States Code*

**Table 16**  
**Action-Specific ARARs<sup>a</sup> for Selected Remedy**

Action/Requirement	Citation <sup>b</sup>	ARAR Determination	Comments
<b>PERCHED AQUIFER – FEDERAL</b>			
<b>Resource Conservation and Recovery Act (42 U.S.C. §§ 6901–6991[j])<sup>c</sup></b>			
On-site waste generation/Person who generates waste shall determine if that waste is a hazardous waste.	HAR Title 11 262-10(a), 262-11	Applicable	Applicable for any operation where waste is generated. The determination of whether wastes generated during remedial activities, such as soil cuttings from well installation and treatment residues, are hazardous will be made when the wastes are generated.
On-site waste generation/Requirements for analyzing waste to determine whether waste is hazardous.	HAR Title 11 264-13(a) and (b)	Applicable	Applicable for any operation where waste is generated. The determination of whether wastes generated during remedial activities are hazardous will be made when the wastes are generated.
Hazardous waste accumulation/On-site hazardous waste accumulation is allowed for up to 90 days as long as the waste is stored in containers or tanks, on drip pads, inside buildings, is labeled and dated, etc.	HAR Title 11 262-34	Applicable	Applicable for any operation where hazardous waste is generated and transported. The determination of whether wastes generated during remedial action activities are hazardous will be made at the time the wastes are generated.
Hazardous waste accumulation/Containers of RCRA hazardous waste must be: <ul style="list-style-type: none"> <li>• Maintained in good condition,</li> <li>• Compatible with hazardous waste to be stored, and</li> <li>• Closed during storage except to add or remove waste.</li> </ul>	HAR Title 11 264-171, 264-172, and 264-173	Applicable	Substantive provisions are applicable if waste is determined to be RCRA hazardous waste.
Hazardous waste accumulation/Inspect container storage areas weekly for deterioration.	HAR Title 11 264-174	Applicable	Substantive provisions are applicable if waste is determined to be RCRA hazardous waste.

(Table continues)

**Table 16** (continued)

Action/Requirement	Citation <sup>b</sup>	ARAR Determination	Comments
Hazardous waste accumulation/Place containers on a sloped, crack-free base, and protect from contact with accumulated liquid. Provide containment system with a capacity of 10 percent of the volume of containers of free liquids. Remove spilled or leaked waste in a timely manner.	HAR Title 11 264-175(a) and (b)	Applicable	Substantive provisions are applicable if waste is determined to be RCRA hazardous.
Site closure/At closure, remove all hazardous waste and residues from the containment system, and decontaminate or remove all containers and liners.	HAR Title 11 264-178	Applicable	Substantive provisions are applicable if waste is determined to be RCRA hazardous.
Use of tanks or piping/Requirements for secondary containment of tank systems and ancillary equipment	HAR Title 11 264-193(b), (c), (d), (e), and (f)	Applicable	Substantive provisions are applicable for phytoremediation treatment unit and associated transfer piping.
Use of tanks or piping/Design requirements for a tank system	HAR Title 11 264-192	Applicable	Substantive provisions are applicable for phytoremediation treatment unit and associated transfer piping.
Use of tanks or piping/Upon closure of tank system, minimize the maintenance and remove or decontaminate all contaminated equipment and materials to the extent necessary to protect human health and the environment.	HAR Title 11 264-197(a)	Applicable	Substantive provisions are applicable for phytoremediation treatment unit and associated transfer piping.
Miscellaneous treatment units/Design requirements for miscellaneous treatment units.	HAR Title 11 264-600	Applicable	Substantive provisions are applicable for phytoremediation treatment unit.
Monitoring/Requirement for identifying chemicals of concern.	HAR Title 11 264-93	Relevant and appropriate	Substantive provisions are relevant and appropriate requirements for identifying groundwater-monitoring COCs. Not applicable because Del Monte Site is not a regulated unit.
Monitoring/Requirements for monitoring groundwater.	HAR Title 11 264-97(b), (d), and (e)(2)–(5)	Relevant and appropriate	Substantive provisions are relevant and appropriate requirements for groundwater monitoring. Not applicable because Del Monte Site is not a regulated unit.
Monitoring/Requirements for an evaluation monitoring program.	HAR Title 11 264-99(b), (c), (e), (f), and (g)	Relevant and appropriate	Substantive provisions are relevant and appropriate requirements for groundwater monitoring. Not applicable because Del Monte Site is not a regulated unit.

(Table continues)

**Table 16** (continued)

Action/Requirement	Citation <sup>b</sup>	ARAR Determination	Comments
Corrective action/The owner or operator required to take corrective action to remediate releases from the regulated unit and to ensure that the regulated unit achieves compliance with the water quality protection standard.	HAR Title 11 264-100(b)	Relevant and appropriate	Substantive provisions are relevant and appropriate requirements for groundwater monitoring and corrective action for the release. Not applicable because Del Monte Site is not a regulated unit.
Corrective action/The owner or operator shall implement corrective action measures that ensure COCs achieve their respective concentration limits at all monitoring points and throughout the zone affected by the release, including any portions of the affected zone that extend beyond the facility boundary, by removing the waste constituents or treating them in place. The owner or operator shall take other action to prevent noncompliance due to a continued or subsequent release including, but not limited to, source control.	HAR Title 11 264-100(c)	Relevant and appropriate	Substantive provisions are relevant and appropriate requirements for groundwater monitoring and corrective action. Not applicable because Del Monte Site is not a regulated unit.
Monitoring/The owner or operator shall establish and implement, in conjunction with the corrective-action measures, a water quality monitoring program that will demonstrate the effectiveness of the corrective action program, effectively determine compliance with the water quality protection standard, and determine the success of the corrective-action measures under subsection (c) of this section.	HAR Title 11 264-100(d)	Relevant and appropriate	Substantive provisions are relevant and appropriate requirements for groundwater monitoring. Not applicable because Del Monte Site is not a regulated unit.
Completion of response action/Completion of the corrective action program must be demonstrated to be in compliance with the water quality protection standard based on the results of sampling and analysis for all chemicals of concern for 1 year.	HAR Title 11 264-100(g)(1) and (3)	Relevant and appropriate	Substantive provisions are relevant and appropriate requirements for groundwater monitoring. Not applicable because Del Monte Site is not a regulated unit.

(Table continues)

Table 16 (continued)

Action/Requirement	Citation <sup>b</sup>	ARAR Determination	Comments
Hazardous waste must be labeled in accordance with DOT regulations before transport.	HAR Title 11 262-31	Applicable	Applicable for any operation where hazardous waste is generated on-site and transported. The determination of whether wastes generated during remedial activities are hazardous will be made when the wastes are generated.
Provides requirements for marking hazardous waste before transport.	HAR Title 11 262-32	Applicable	Applicable for any operation where hazardous waste is generated on-site and transported. The determination of whether wastes generated during remedial activities are hazardous will be made when the wastes are generated.
A generator must assure that the transport vehicle is correctly placarded before transport of hazardous waste.	HAR Title 11 262-33	Applicable	Applicable for any operation where hazardous waste is generated on-site and transported. The determination of whether wastes generated during remedial activities are hazardous will be made when the wastes are generated.
<b>PERCHED AQUIFER – STATE (No action-specific State ARARs have been identified for the perched aquifer)</b>			
<b>BASAL AQUIFER – FEDERAL</b>			
<b>Resource Conservation and Recovery Act (42 U.S.C. §§ 6901–6991[i])<sup>c</sup></b>			
All of the ARARs cited above for the perched aquifer also apply to the basal aquifer. The phytoremediation treatment unit referenced for the perched aquifer, becomes the groundwater treatment unit for the basal aquifer.			
<b>Underground Injection Control Program (40 CFR Part 144)</b>			
Underground Injection Control regulations and permitting requirements for five general classes of injection wells.	40 CFR Part 144	Applicable (if injection wells used)	Applicable if groundwater injection wells used for recharge of treated groundwater. This is not currently planned, but may be considered if the volume of basal aquifer extraction exceeds Del Monte's water rights. The injection wells would be considered Class V injection wells.

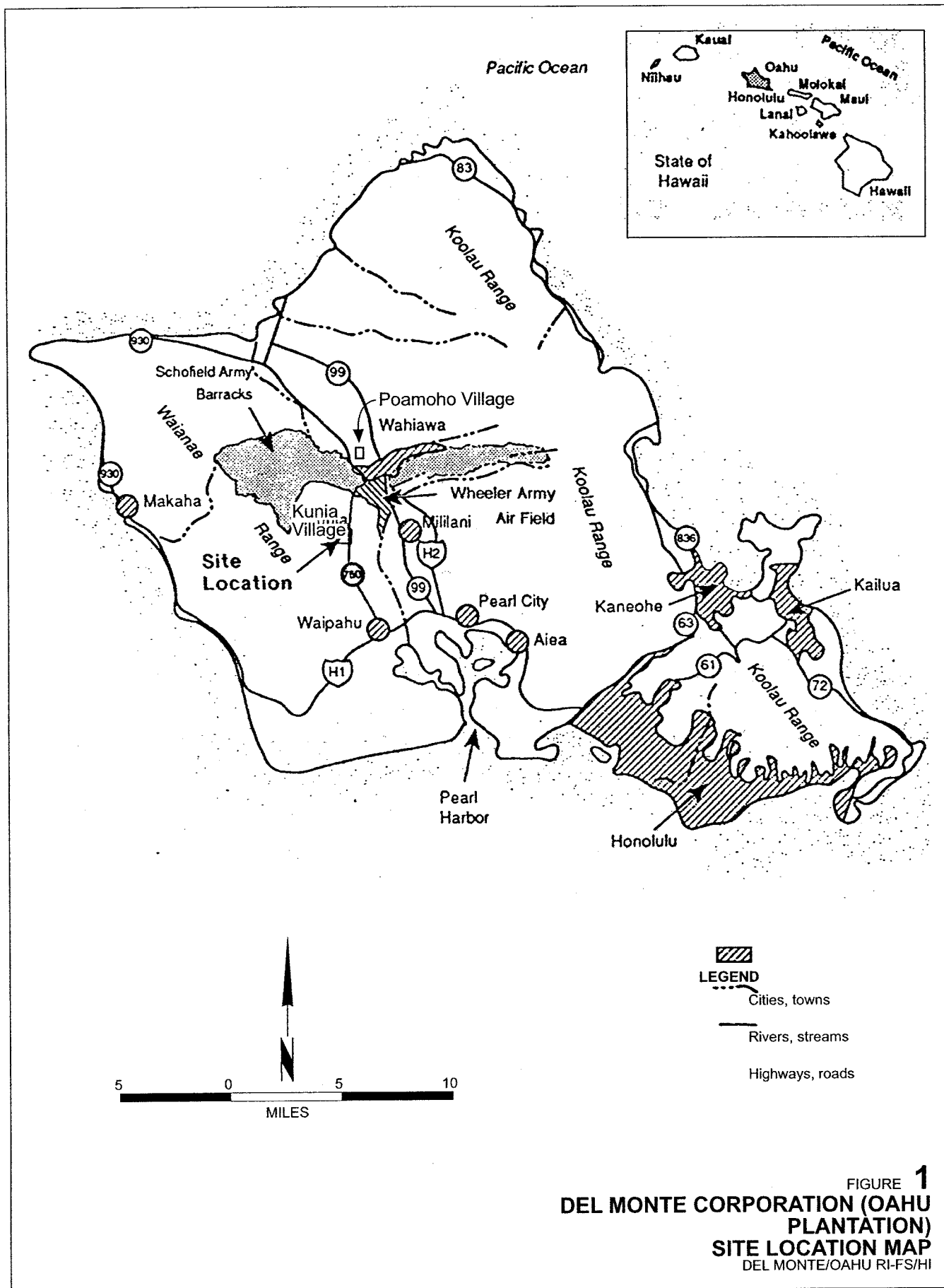
(Table continues)

**Table 16** (continued)

Action/Requirement	Citation <sup>b</sup>	ARAR Determination	Comments
<b>Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)</b>			
Pesticide use/Requirements for a buffer zone around water wells.	FIFRA § 3 and 40 CFR Part 152 Subparts C and D	Applicable	Places restrictions on pesticide formulations containing 1,3-dichloropropene (including Telone II®, which is used on the Oahu plantation), that stipulate such formulations cannot be used within 100 feet of a water well. Will require establishment of a buffer zone around any monitoring, extraction or injection wells installed in or near pineapple fields.
<b>BASAL AQUIFER – STATE (No action-specific State ARARs have been identified for the perched aquifer)</b>			
<p>Notes:</p> <ul style="list-style-type: none"> <li><sup>a</sup> many action-specific ARARs contain chemical-specific limitations and are addressed in this action-specific ARAR table</li> <li><sup>b</sup> only the substantive provisions of the requirements cited in this table are ARARs</li> <li><sup>c</sup> statutes and policies, and their citations, are provided as headings to identify general categories of ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the entire statutes or policies are ARARs; specific ARARs are addressed in the table below each general heading; only pertinent substantive requirements of the specific citations are considered ARARs</li> </ul> <p>Acronyms/Abbreviations:</p> <ul style="list-style-type: none"> <li>ARAR – applicable or relevant and appropriate requirement</li> <li>CFR – Code of Federal Regulations</li> <li>COCs – contaminants of concern</li> <li>DOT – Department of Transportation</li> <li>FIFRA – Federal Insecticide, Fungicide, and Rodenticide Act</li> <li>HAR – Hawaii Administrative Rules</li> <li>RCRA – Resource Conservation and Recovery Act</li> <li>§ – section</li> <li>U.S.C. – United States Code</li> </ul>			

**Figures**



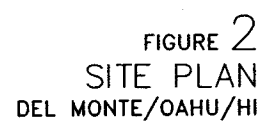


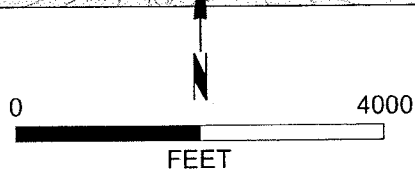
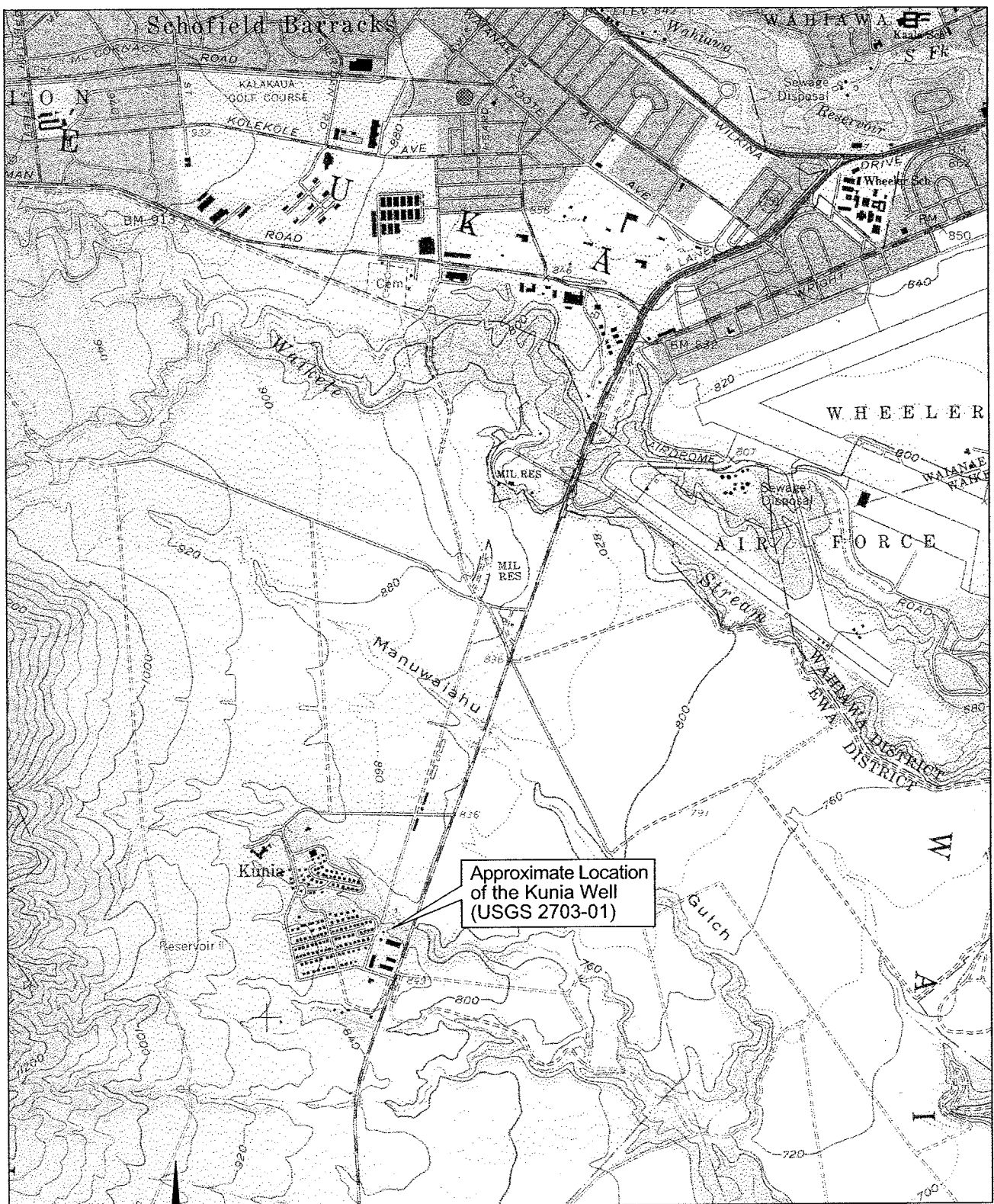


11

## Drainage Channels

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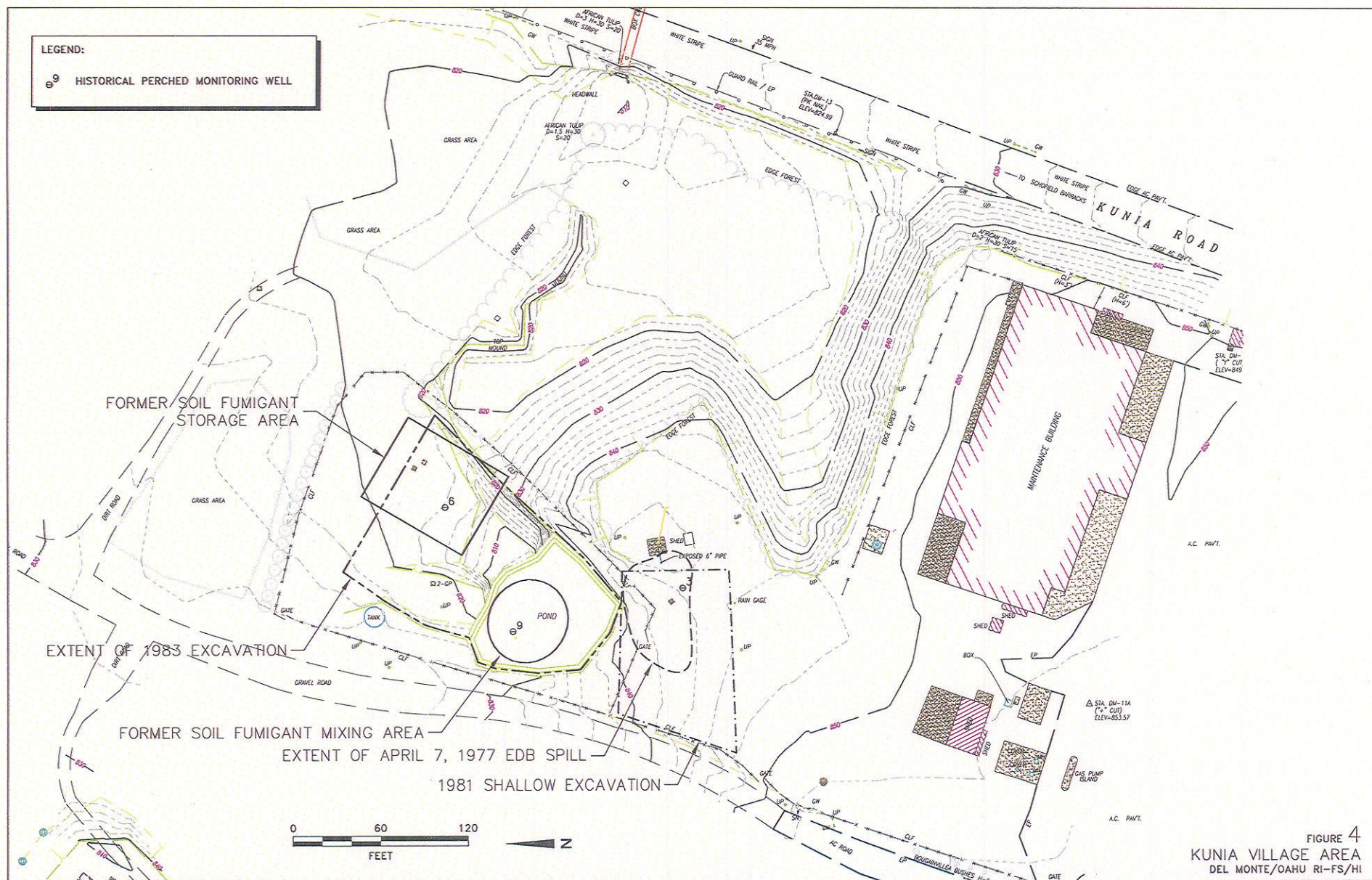




Source: USGS 7.5 minute quad "Schofield Barracks".

**FIGURE 3**  
**KUNIA VILLAGE VICINITY**  
 DEL MONTE/OAHU RI-FS/HI







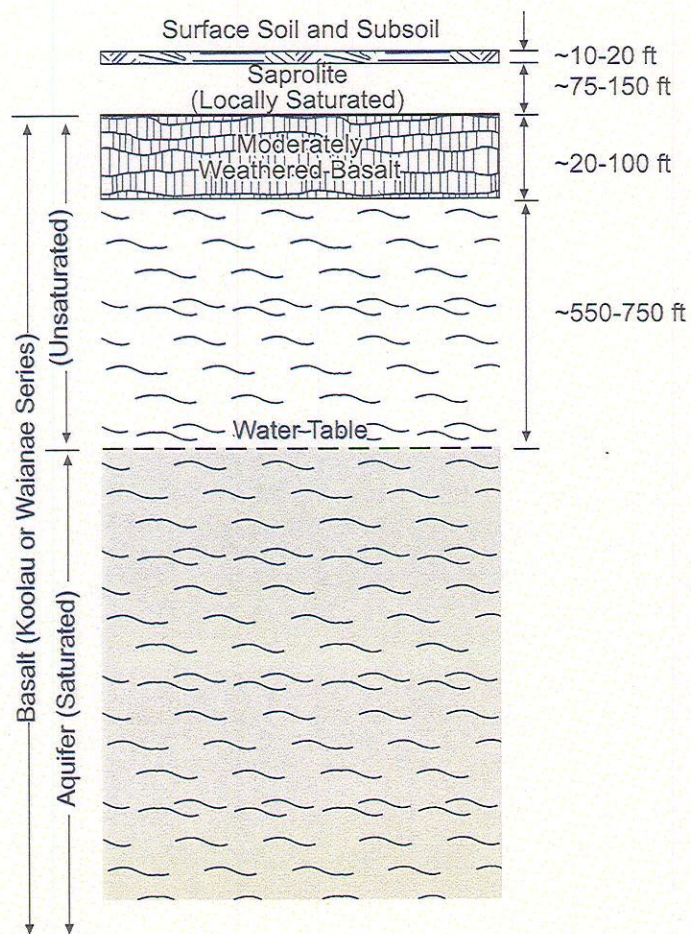


FIGURE 5  
**GENERALIZED GEOLOGIC CROSS  
 SECTION OF THE CENTRAL OAHU AREA**  
 DEL MONTE/OAHU RI-FS/HI



LEGEND:

- ⊙ P-2 PERCHED ZONE PIEZOMETER  
(PIEZOMETER SAMPLES WERE COLLECTED  
IN MARCH 1997)
- ⊙ MW-4 EXISTING PERCHED ZONE MONITORING WELL
- ⊙ HW-9 HISTORICAL PERCHED MONITORING WELL
- TB-5 TREATABILITY STUDY BORING
- ⊕ EW-4 EXISTING EXTRACTION WELL
- EW-4 NEW EXTRACTION WELL
- MW-12 NEW PERCHED ZONE MONITORING WELL
- BOREHOLE



NOTES:

- 1) CONTOUR CONCENTRATIONS ARE CONCEPTUAL AND ARE BASED ON AVAILABLE DATA POINTS.
- 2) CONCENTRATION CONTOURS ARE INTENDED TO BE REPRESENTATIVE OF CONDITIONS AT THE BASE OF THE PERCHED AQUIFER ONLY. AS SUCH, CONTOURS ARE BASED PRIMARILY ON WELLS SCREENED AT BASE OF AQUIFER. OTHER WELLS ARE USED ONLY IN AREAS LACKING SUCH DATA.

FIGURE 6  
**PERCHED EXTRACTION  
WELL LOCATIONS**  
DEL MONTE/TREATABILITY STUDY/HI

Golder Associates



LEGEND:	
⊗ P-2	PERCHED ZONE PIEZOMETER (PIEZOMETER SAMPLES WERE COLLECTED IN MARCH 1997)
⊗ MW-4	EXISTING PERCHED ZONE MONITORING WELL
⊗ HW-9	HISTORICAL PERCHED MONITORING WELL
■ TB-5	TREATABILITY STUDY BORING
⊕ EW-4	EXISTING EXTRACTION WELL EW-1 TO EW-12 INSTALLED MAY - NOV. 1998 EW-13 TO EW-30 INSTALLED JULY 2000
⊕ EW-34	NEW EXTRACTION WELL (INSTALLED APRIL - MAY 2001)
⊕ MW-10	NEW PERCHED ZONE MONITORING WELL (INSTALLED APRIL - MAY 2001)
6/01 38	DATE GROUNDWATER SAMPLE WAS COLLECTED AND EDB CONCENTRATION IN $\mu\text{g/L}$
4/01 28	ESTIMATED GROUNDWATER CONCENTRATION ( $\mu\text{g/L}$ ) CALCULATED FROM SOIL SAMPLE
<0.02	NOT DETECTED PQL SHOWN
100	EDB APPROXIMATED CONTOUR, $\mu\text{g/L}$
?	INDICATES AREAS WHERE CONCENTRATION CONTOURS ARE INFERRED DUE TO INSUFFICIENT DATA

TOTAL AREAS ENCLOSED WITHIN CONTOURS, $\text{FT}^2$ :
1,000 $\mu\text{g/L}$ - 890
100 $\mu\text{g/L}$ - 9,842
10 $\mu\text{g/L}$ - 30,476
1 $\mu\text{g/L}$ - 50,071

#### NOTES:

- 1) CONTOUR CONCENTRATIONS ARE CONCEPTUAL AND ARE BASED ON AVAILABLE DATA POINTS.
- 2) CONTOUR CONCENTRATIONS ARE BASED UPON THE MOST RECENT PERCHED GROUNDWATER SAMPLES COLLECTED AT EACH DATA POINT, AND FROM SOIL DATA CONVERTED INTO POTENTIAL GROUNDWATER CONCENTRATIONS IN AREAS WHERE GROUNDWATER DATA WERE NOT AVAILABLE. SEE APPENDIX I OF THE RI REPORT (GOLDER 1998a) AND TABLE 4-1.
- 3) THE ABSENCE OF EDB IN SOIL SAMPLES COLLECTED FROM WELLS MW-9, MW-10 AND MW-14, COMBINED WITH THE FACT THAT PERCHED AQUIFER IS NOT PRESENT TO THE NORTH OF THESE WELLS, INDICATES THAT THE 1  $\mu\text{g/L}$  EDB CONCENTRATION CONTOUR CANNOT BE INFERRED TO EXTEND TO THE NORTH OF THESE WELLS. ALTHOUGH EDB WAS ALSO NOT DETECTED IN SOIL SAMPLES FROM WELLS MW-12 AND MW-17, THE ESTIMATED 1  $\mu\text{g/L}$  CONTOUR EXTENDS TO THE EAST BEYOND MW-12 AND MW-17, BECAUSE PERCHED GROUNDWATER DATA FROM MW-6 PROVIDES DATA TO INTERPOLATE A CONCENTRATION GRADIENT TOWARDS THE EAST.

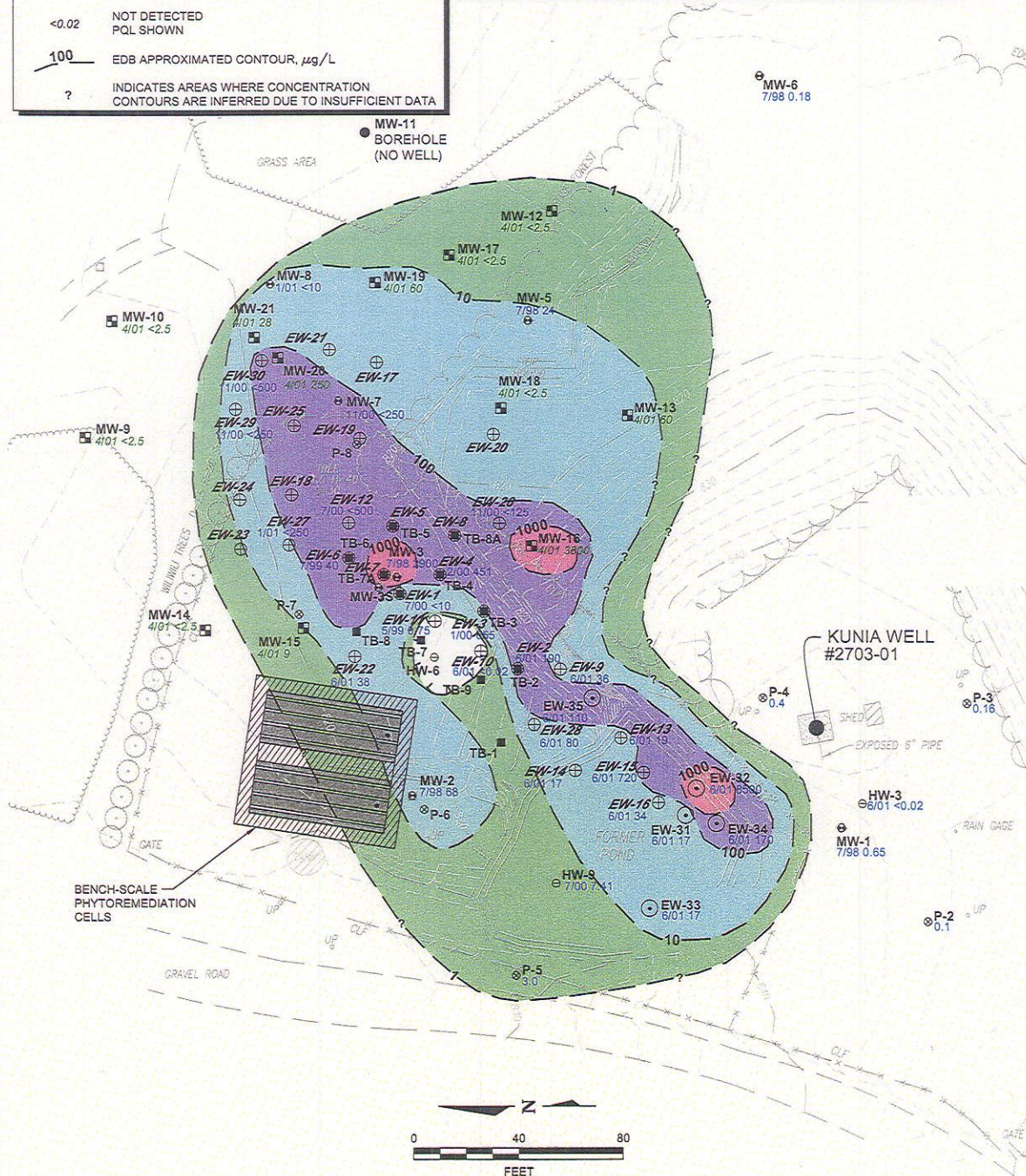


FIGURE 7  
EDB CONCENTRATION CONTOURS AT  
THE BASE OF THE SAPROLITES  
DEL MONTE/OAHU RI-FS/RI



LEGEND:	
⊙ P-2	PERCHED ZONE PIEZOMETER (PIEZOMETER SAMPLES WERE COLLECTED IN MARCH 1997)
⊙ MW-4	EXISTING PERCHED ZONE MONITORING WELL
⊙ HW-9	HISTORICAL PERCHED MONITORING WELL
■ TB-5	TREATABILITY STUDY BORING
⊕ EW-4	EXISTING EXTRACTION WELL EW-1 TO EW-12 INSTALLED MAY - NOV. 1998 EW-13 TO EW-30 INSTALLED JULY 2000
⊙ EW-34	NEW EXTRACTION WELL (INSTALLED APRIL - MAY 2001)
■ MW-10	NEW PERCHED ZONE MONITORING WELL (INSTALLED APRIL - MAY 2001)
6/01 38	DATE GROUNDWATER SAMPLE WAS COLLECTED AND DBCP CONCENTRATION IN $\mu\text{g/L}$
4/01 28	ESTIMATED GROUNDWATER CONCENTRATION ( $\mu\text{g/L}$ ) CALCULATED FROM SOIL SAMPLE
<0.02	NOT DETECTED PQL SHOWN
100	DBCP APPROXIMATED CONTOUR, $\mu\text{g/L}$
?	INDICATES AREAS WHERE CONCENTRATION CONTOURS ARE INFERRED DUE TO INSUFFICIENT DATA

TOTAL AREAS ENCLOSED WITHIN CONTOURS, $\text{FT}^2$ :	
1,000 $\mu\text{g/L}$	- 3,587
100 $\mu\text{g/L}$	- 21,960
10 $\mu\text{g/L}$	- 39,065
1 $\mu\text{g/L}$	- 47,061

#### NOTES:

- 1) CONTOUR CONCENTRATIONS ARE CONCEPTUAL AND ARE BASED ON AVAILABLE DATA POINTS.
- 2) CONTOUR CONCENTRATIONS ARE BASED UPON THE MOST RECENT PERCHED GROUNDWATER SAMPLES COLLECTED AT EACH DATA POINT, AND FROM SOIL DATA CONVERTED INTO POTENTIAL GROUNDWATER CONCENTRATIONS IN AREAS WHERE GROUNDWATER DATA WERE NOT AVAILABLE. SEE APPENDIX I OF THE RI REPORT (GOLDER 1998a) AND TABLE 4-1.
- 3) THE ABSENCE OF DBCP IN SOIL SAMPLES COLLECTED FROM WELLS MW-9, MW-10 AND MW-14, COMBINED WITH THE FACT THAT THE PERCHED AQUIFER IS NOT PRESENT TO THE NORTH OF THESE WELLS, INDICATES THAT THE 1  $\mu\text{g/L}$  DBCP CONCENTRATION CONTOUR CANNOT BE INFERRED TO EXTEND TO THE NORTH OF THESE WELLS. ALTHOUGH DBCP WAS ALSO NOT DETECTED IN SOIL SAMPLES FROM WELL MW-17, THE ESTIMATED 1  $\mu\text{g/L}$  CONTOUR EXTENDS TO THE EAST BEYOND MW-17, BECAUSE PERCHED GROUNDWATER DATA FROM MW-6 PROVIDES DATA TO INTERPOLATE A CONCENTRATION GRADIENT TOWARDS THE EAST.

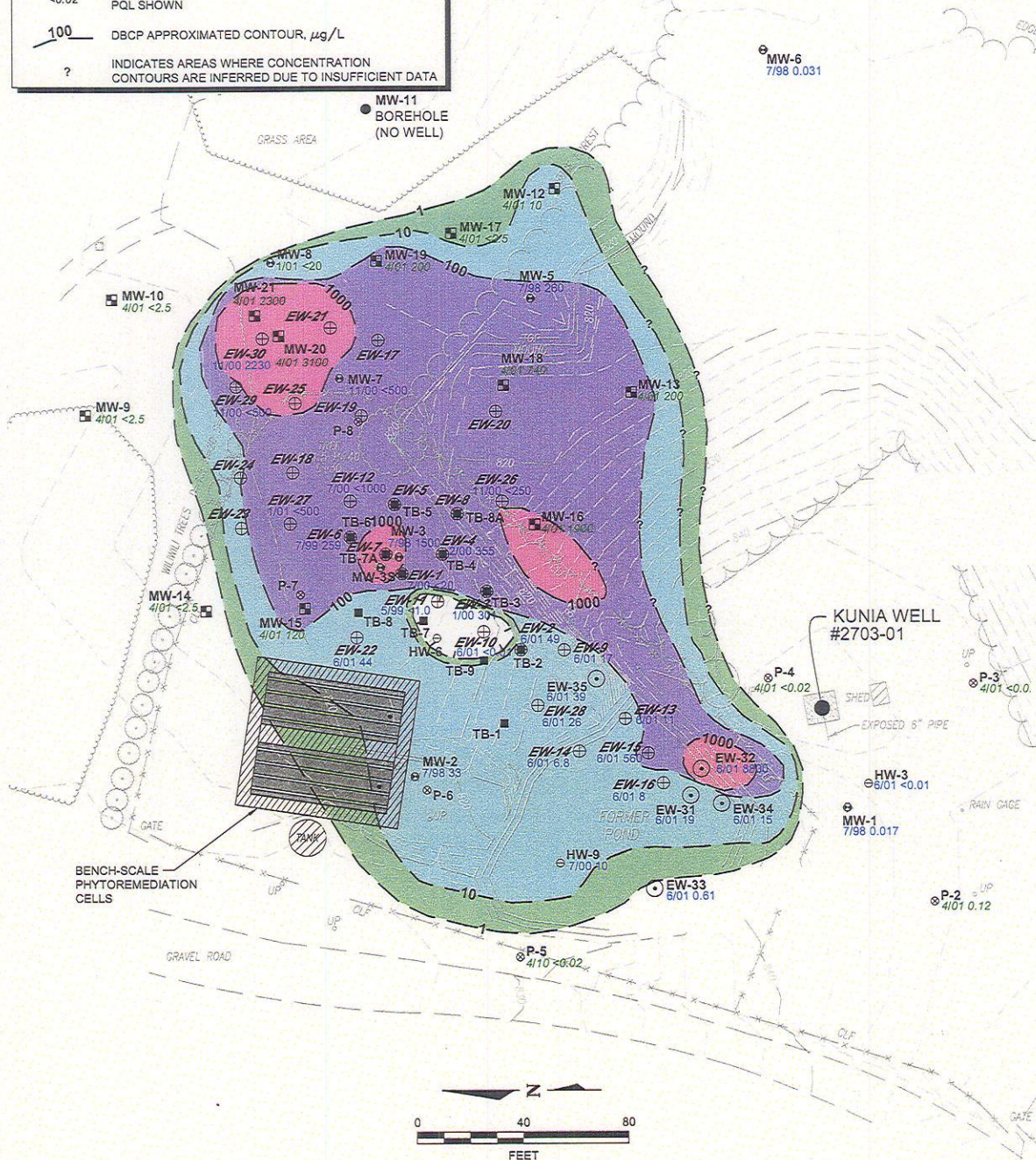
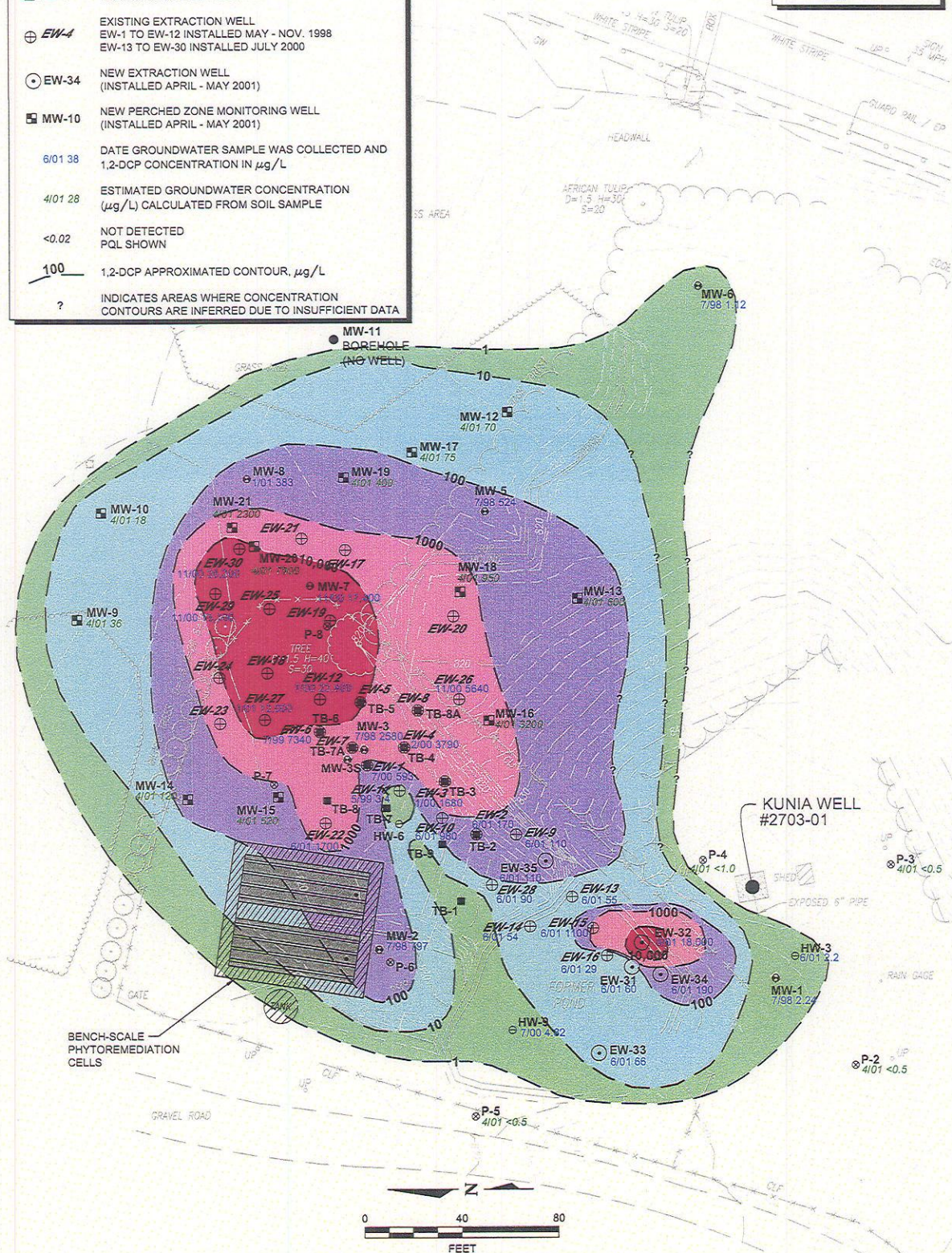


FIGURE 8  
DBCP CONCENTRATION CONTOURS AT  
THE BASE OF THE SAPOLITES  
DEL MONTE/OAHU RI-FSHI



- LEGEND:
- ⊕ P-2 PERCHED ZONE PIEZOMETER (PIEZOMETER SAMPLES WERE COLLECTED IN MARCH 1997)
  - ⊕ MW-4 EXISTING PERCHED ZONE MONITORING WELL
  - ⊕ HW-9 HISTORICAL PERCHED MONITORING WELL
  - TB-5 TREATABILITY STUDY BORING
  - ⊕ EW-4 EXISTING EXTRACTION WELL  
EW-1 TO EW-12 INSTALLED MAY - NOV. 1998  
EW-13 TO EW-30 INSTALLED JULY 2000
  - ⊕ EW-34 NEW EXTRACTION WELL  
(INSTALLED APRIL - MAY 2001)
  - ⊕ MW-10 NEW PERCHED ZONE MONITORING WELL  
(INSTALLED APRIL - MAY 2001)
  - 6/01 38 DATE GROUNDWATER SAMPLE WAS COLLECTED AND  
1,2-DCP CONCENTRATION IN  $\mu\text{g/L}$
  - 4/01 28 ESTIMATED GROUNDWATER CONCENTRATION  
( $\mu\text{g/L}$ ) CALCULATED FROM SOIL SAMPLE
  - <0.02 NOT DETECTED  
PQL SHOWN
  - 100 1,2-DCP APPROXIMATED CONTOUR,  $\mu\text{g/L}$
  - ? INDICATES AREAS WHERE CONCENTRATION  
CONTOURS ARE INFERRED DUE TO INSUFFICIENT DATA

TOTAL AREAS ENCLOSED WITHIN CONTOURS, $\text{FT}^2$ :	
10,000 $\mu\text{g/L}$	- 4,780
1,000 $\mu\text{g/L}$	- 14,773
100 $\mu\text{g/L}$	- 33,249
10 $\mu\text{g/L}$	- 58,104
1 $\mu\text{g/L}$	- 75,528

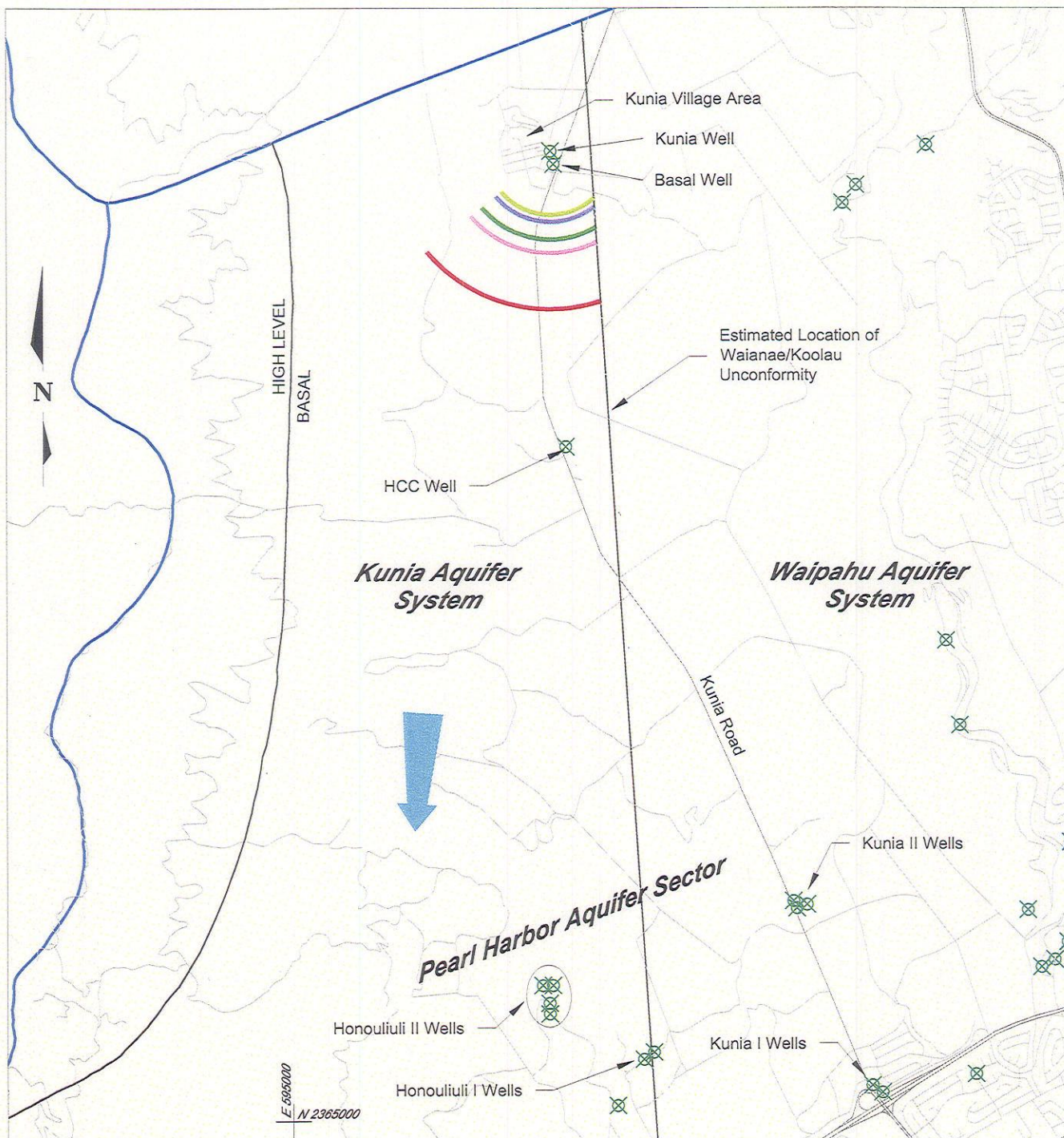


#### NOTES:

- 1) CONTOUR CONCENTRATIONS ARE CONCEPTUAL AND ARE BASED ON AVAILABLE DATA POINTS.
- 2) CONTOUR CONCENTRATIONS ARE BASED UPON THE MOST RECENT PERCHED GROUNDWATER SAMPLES COLLECTED AT EACH DATA POINT, AND FROM SOIL DATA CONVERTED INTO POTENTIAL GROUNDWATER CONCENTRATIONS IN AREAS WHERE GROUNDWATER DATA WERE NOT AVAILABLE. SEE APPENDIX I OF THE RI REPORT (GOLDER 1998a) AND TABLE 4-1.

FIGURE 9  
1,2-DICHLOROPROPANE CONCENTRATION  
CONTOURS AT THE BASE OF THE SAPROLITES  
DEL MONTE/OAHU RI-FS/HI





SOURCE: R.I. REPORT (GOLDER 1998).

LEGEND:

BEST	1800'	REASONABLE BEST, AVERAGE AND
AVERAGE	2500'	REASONABLE WORST CASE 17 YEAR
WORST	4500'	(1998) EDB TRAVEL DISTANCES TO MCL
BEST	2000'	REASONABLE BEST, AVERAGE AND
AVERAGE	2900'	REASONABLE WORST CASE 17 YEAR
WORST	4500'	(1998) DBCP TRAVEL DISTANCES TO MCL

— AQUIFER SECTOR BOUNDARY

**Central** AQUIFER SECTOR NAME

← APPROXIMATE GROUNDWATER FLOW DIRECTION

⊗ WELL LOCATION

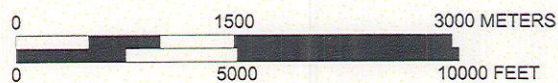
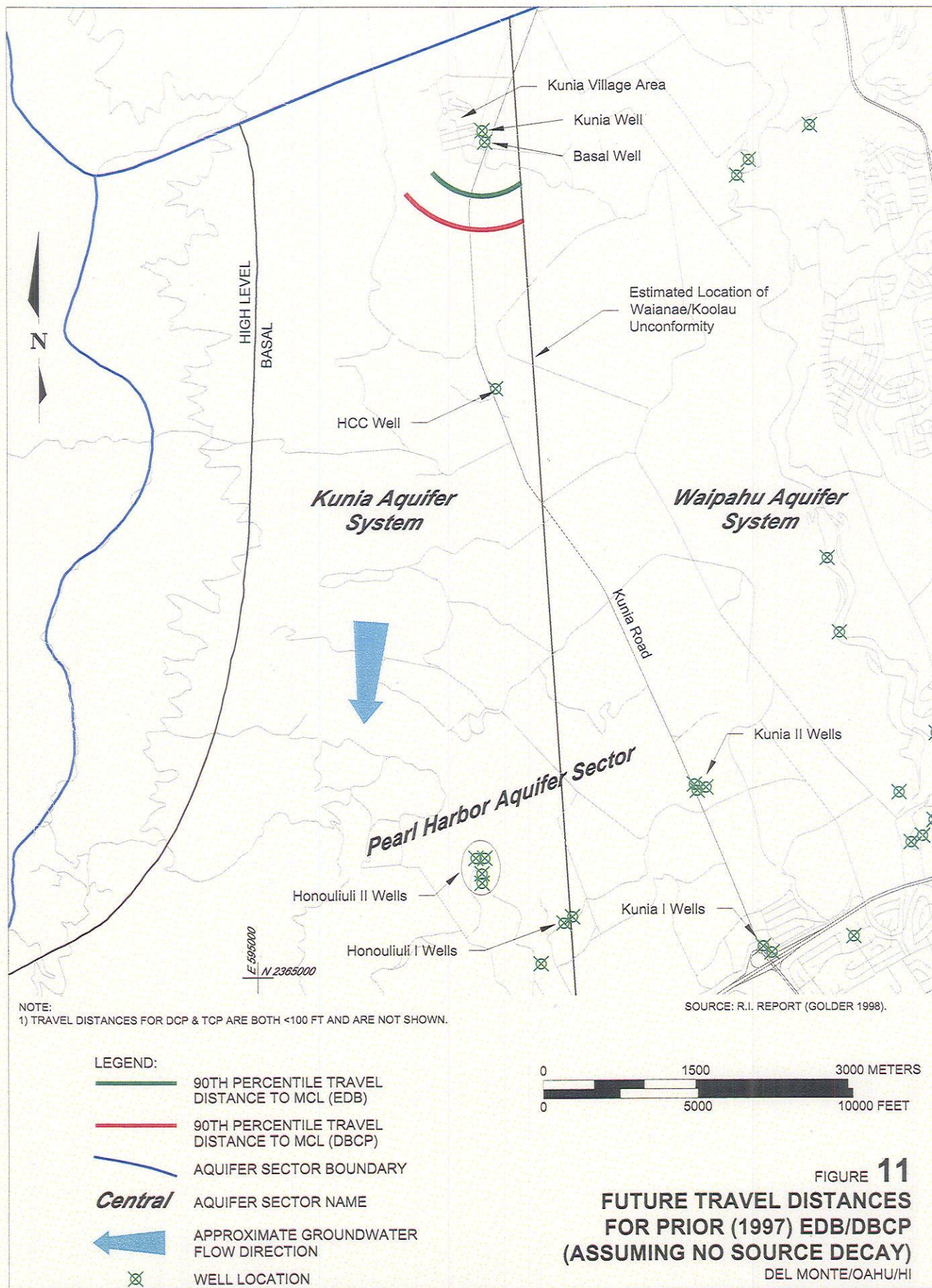


FIGURE 10  
CURRENT TRAVEL DISTANCES  
FOR PRIOR (1980-1998) EDB/DBCP  
(WITH SOURCE DECAY)

DEL MONTE/OAHU/HI

Golder Associates





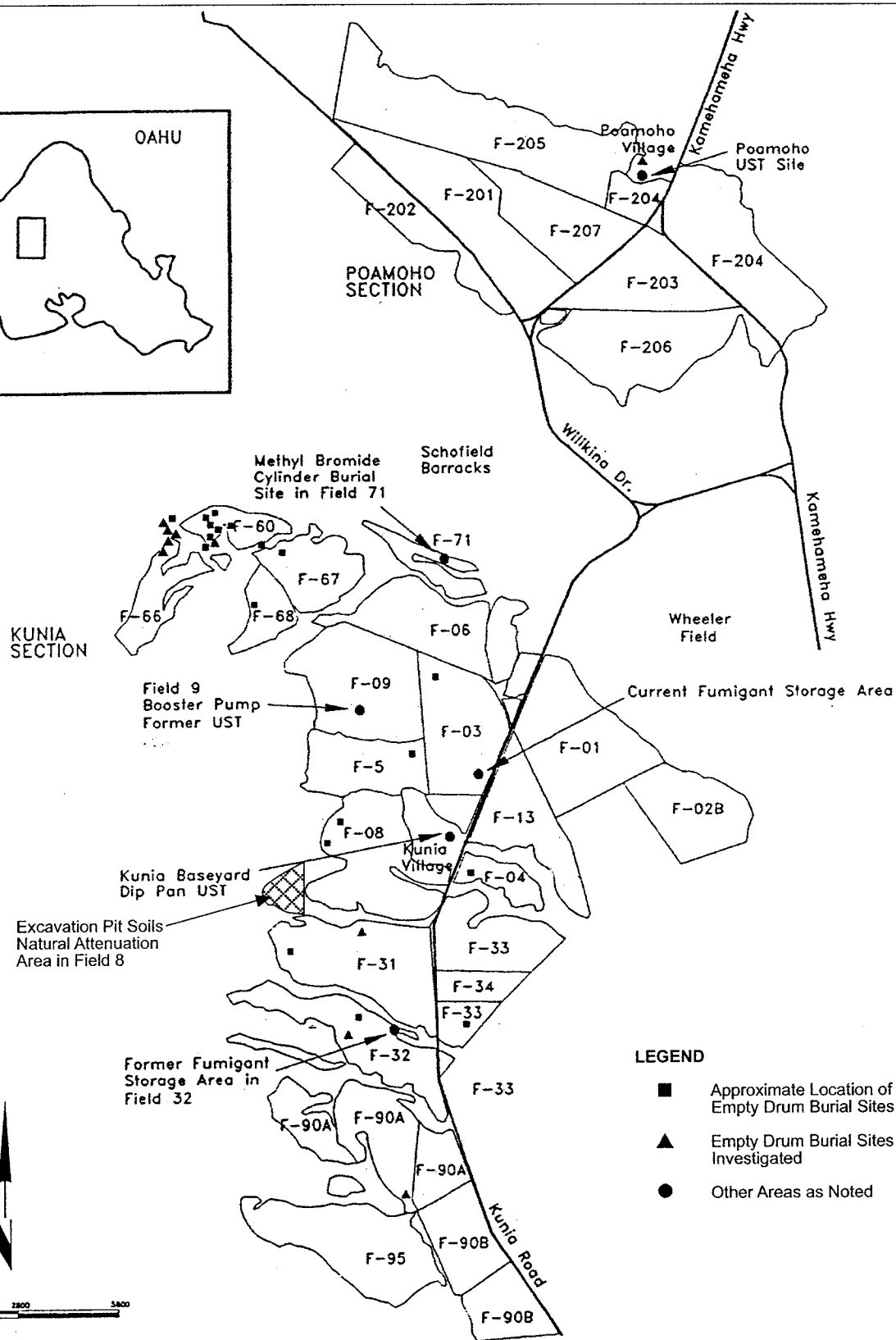
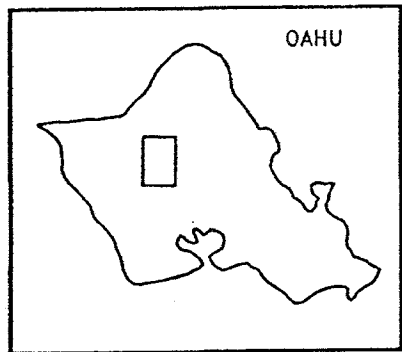


FIGURE 12  
LOCATIONS OF OTHER POTENTIAL SOURCE AREAS  
DEL MONTE CORPORATION OAHU PLANTATION  
DEL MONTE/OAHU RI-FS/HI